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ABSTRACT

This study investigates the availability and practicality of using affordable commercial document delivery systems instead of conventional interlibrary loan (ILL) to provide California State College, Bakersfield (CSB), Library users with periodical literature from off-site locations. The purpose, limits, conceptual framework, and importance of the study are discussed, and background issues are explored through a review of the development and current operation of CSB's ILL service, an analysis of CSB patrons' external resource demands, a review of the significant professional literature relating to document delivery, an evaluation of the performance of the document delivery segment of CSB's ILL service, and a survey of document delivery suppliers identified as potentially capable of meeting CSB's document delivery needs. Findings are analyzed and interpreted. Conclusions indicate that eight commercial document delivery services have the potential for meeting CSB's document delivery needs and deserve further evaluation and consideration for implementation, and short- and long-term recommendations for further investigation are presented. Supporting documentation is provided in eight exhibits and two appendices. Notes and an extensive bibliography are also provided. (KM)

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# A DOCUMENT DELIVERY ALTERNATIVE FOR THE CSB LIBRARY: USING COMMERCIAL SUPPLIERS TO SUPPLEMENT CONVENTIONAL INTERLIBRARY LOAN

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS . . . . . V

Chapter

I. EXECUTIVE SUMMARY . . . . . 1

II. INTRODUCTION. . . . . 4

A. Statement of Purpose. . . . . 4
B. Limits of the Study . . . . . 4
C. Conceptual Framework. . . . . 7
D. Importance of the Study . . . . . 10

III. REVIEW OF RELATED LITERATURE AND PRESENT STATE OF DOCUMENT DELIVERY . . . . . 15

IV. DESIGN OF THE STUDY . . . . . 21

A. Components of Methodology . . . . . 21
B. Limitations of Methodology. . . . . 23

V. PRESENTATION OF FINDINGS. . . . . 25

A. Development and Current Operations of Interlibrary Loan (ILL) at CSB . . . . . 25
B. Patron's External Resource Demands at the CSB Library . . . . . 35.
C. Literature Review: Criteria For An Enhanced Document Delivery Systems. . . . . 37
D. Literature Review: Commercial Document Delivery Suppliers . . . . . 45
E. Evaluation of CSB Document Delivery (ILL) . . . . . 48
F. Survey of Commercial Document Delivery Suppliers. . 58

VI. ANALYSIS AND INTERPRETATION OF FINDINGS . . . . . 72

A. CSB's ILL Operations. . . . . 72
B. Patron's External Resource Demands at CSB . . . . . 73
C. Literature Analysis . . . . . 74
D. CSB Document Delivery (ILL) . . . . . 77
E. Selected Commercial Document Delivery Suppliers . . 79

VII. CONCLUSIONS . . . . . 83

VIII. RECOMMENDATIONS . . . . . 86

NOTES. . . . . 91

BIBLIOGRAPHY . . . . . 100

APPENDIX A. Results of Analysis of Patron's External Resource Demands at CSB . . . . . 110

APPENDIX B. Unstructured Questionnaire Sent to Commercial Document Suppliers . . . . . 118

## LIST OF EXHIBITS


1. ILL Activity for CSB, CSU System, and Five CSU Libraries with Smallest Collections. . . . . 28

2. ILL Activity for CSB, CSU System, and Five Most Isolated CSU Libraries. . . . . 29

3. User Willingness to Pay for Quicker Delivery . . . . . 42

4. CSB ILL Activity by Type of Material Borrowed. . . . . 49

5. Diagram of ILL Request Fulfillment Time at CSB . . . . 51

6. CSB ILL Activity as Measured by Total Requests Submitted 1976/77 to 1984/85 . . . . . 55

7. CSB ILL Requests Submitted Compared to Requests Filled 1976/77 to 1984/85 . . . . . 58

8. Comparison of Selected Commercial Document Delivery. . 82

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# I. EXECUTIVE SUMMARY

The basic question explored in this study was whether procurement and delivery of a significant portion of ILL requests could be done faster, yet still cost effectively, by utilizing commercial information suppliers in place of conventional ILL. To gather information which might provide a basis for answering this question the authors investigated four areas.

1. The nature of CSB Library patrons' needs for external resources was investigated through an analysis of interlibrary loan requests for periodical literature.

2. The performance of CSB's conventional ILL service was reviewed in terms of its speed and cost.

3. A group of 69 commercial document delivery suppliers were contacted and requested to supply information on their costs and services.

4. The information obtained in the three preceding areas of investigation and set of four criteria--speed of delivery, cost, product and system quality, and reliability--were used to analyze the performance claims of the responding commercial suppliers.

This analysis led the authors to select eight suppliers which were judged as potentially capable of meeting CSB needs. The selected suppliers include:

The British Library Document Supply Center
Data/Courier Inc.
Information On Demand
Information Store
Institute for Scientific Information (ISI)

Los Angeles Public Library
Predicasts
University Microfilms International Article Clearinghouse

Following is a summary of the general characteristics of the eight suppliers.

1. Two of the selected suppliers are conventional fee-based suppliers (e.g., libraries); two are information services; three are online database producers; and one is a clearinghouse.

2. Seven of the services are located in the United States--four in the eastern United States and three in California. Only one, the British Library Document Supply Centre, is a foreign supplier.

3. Comprehensive subject coverage is offered by three suppliers (BLDSC, Information On Demand, and The Information Store); broad, but not comprehensive, subject coverage is offered by three suppliers (ISI, LAPL, and UMI); and specific subject coverage is given by two suppliers (Data/Courier and Predicasts).

4. All use multiple ordering and delivery methods. Suppliers' processing time for orders varies anywhere from thirty minutes to 48 hours.

5. All provide rush document delivery service.

6. All, with the exception of LAPL, charge a base-price for a single article up to a maximum number of pages usually ten or twenty pages. Articles which are longer than this maximum are assessed additional charges. Prices for the delivery of an average six page periodical article range from a low of $5 to a high of $50. Higher prices usually provide for faster delivery.

7. All the suppliers using this base-price method, with the exception of The Information Store, normally include in that

base-price handling fees, photocopying charges, copyright payments, and first class mail delivery costs.

8. All provide, as a minimum, good photocopies of articles.

(A detailed profile of each supplier is offered later in the report.)

This study represents only an initial exploration of commercial document delivery suppliers and lays the groundwork for further investigation. The authors propose that additional phases of investigation be used to determine which suppliers provide the most cost-effective means and fastest document delivery service.

## II. INTRODUCTION

### A. Statement of Purpose

Interlibrary Loan (ILL) is a valuable service for patrons of the CSB Library because it greatly expands the size and scope of the Library's collection. However, its value was somewhat diminished because it is frequently too slow to be a practical option for many researchers working under limited time constraints. The purpose of this study is to assess the potential of some alternative means of information procurement for providing faster, yet still affordable, access to this type of information. Specifically the study was concerned with investigating the availability of and practicality of utilizing affordable but non-conventional (commercial) document delivery services to provide CSB Library users with periodical literature from off-site collections.

### B. Limits of the Study

As indicated in the original proposal for this study, the focus of the author's research was limited to exploring the basic issues and considerations involved in any program to upgrade the level of document delivery offered at CSB. Areas of investigation were to include the availability of alternate sources and technologies for document delivery, the characteristics of those alternate systems, the nature of CSB patron's demands for external information resources, the most current information in the professional literature relating to document delivery, the cost and performance of

existing document delivery systems at CSB, and so on. With the completion of this exploratory phase, it appears that two additional study phases will be needed for a fairly complete investigation which could lead to the implementation of an enhanced document delivery program. Phase II would involve a trial evaluation of the most appropriate commercial document suppliers which have been identified in this study. Phase III would involve the implementation of a program involving a commercial supplier or mix of suppliers based on the results of the Phase II evaluations.

The term document delivery has multiple meanings and is used in reference to every aspect of information retrieval and storage from inputting of text (e.g., electronic publishing) to the study of entire integrated systems of information capture, storage, retrieval, and delivery. Because the subject of document delivery encompasses so many areas, it is important to delimit the areas covered and excluded in this study.

The document delivery services and/or technologies explored in this study were limited to those which:

(1) address "the transfer of a document or surrogate from a supplier, whether a library or a document service to a requesting library;"[1]

(2) actually exist and are marketed (nonexperimental);

(3) provide faster document delivery than conventional ILL systems or are used in conjunction with conventional ILL systems to enhance document delivery speed;

(4) could be implemented within a six to twelve month period after the initial research was completed;

(5) could be tried on a trial basis without a large output of funds;

(6) access a broad or "comprehensive" range of subjects and/or at least subjects requested most often by CSB ILL users;

(7) supply periodical literature;

(8) can supply requested document in one week or less;

(9) cost no more than $20 per request;

(10) fill a high percentage of submitted requests;

(11) are either publicly or privately funded;

(12) offer off-site supply (excluding suppliers who provide on-site compact collections in such forms as optical disk or microforms and full-text online services).

Services and technologies excluded from the study include:

(1) bibliographic utilities with ILL systems, such as OCLC, RLIN, WLN, etc., which improve document ordering but do not necessarily enhance delivery methods;

(2) proposed or future document delivery programs such as national or regional interlending systems;

(3) suppliers, which primarily deal in highly specialized or difficult to locate materials;

(4) electronic publishing or electronic journals;

(5) assessments of the present CSB ILL system, except for purposes of comparing it to commercial document delivery services;

(6) college or system run courier services;

(7) on-site compact collections such as optical disk storage of full-text documents or compact/cartridge microform collections.

## C. Conceptual Framework

### 1. Research Question

The question which prompted this study was whether procurement and delivery of a significant portion of ILL requests could be handled faster, yet still cost effectively, by utilizing commercial information sources in place of conventional ILL. A number of assumptions are made by the authors in conducting this investigation.

### 2. Assumptions

a. In general terms, the use of ILL and document delivery services of any kind presumes that libraries cannot, nor should they, collect all available information. On the other hand, the relatively limited use of document delivery compared with all library functions, supports the assumption that document delivery is not a substitute for in-house library collections but rather is an enhancement to such collections.

b. Timely document procurement and delivery should be viewed as a viable and better alternative to ownership of necessary but infrequently used information sources. Included in this assumption are two "sub-assumptions." First, for infrequently used sources, timely access is an equally good or superior option from an economics standpoint both in terms of costs for an individual library as well as costs associated with maintaining the entire resource "sharing" system. Second, the viability of the access concept is not outweighed by its potential for being abused in such ways as the abdication by libraries of their individual collection development responsibilities, excessive drain on the resources of large, net-lender collectons, and Copyright Law abuse.

c. Information which is available more quickly is of greater value to the user.

d. A service which can deliver information rapidly will be used by increased numbers of users if the price is considered reasonable for the perceived value of the service and information.

e. Faster document delivery is wanted and needed by users at CSB. This assumption is partially based on the fact that as CSB's conventional document delivery service (ILL) has increased in efficiency and speed, use has also increased.

f. Many academic libraries, including CSB, are not optimizing alternate document delivery services and technologies.

g. Libraries are not realizing the total benefits of bibliographic database searching and other library automation developments if an equally effective document delivery system is not provided.

3. Operational Definitions of Important Concepts[2]

a. External information resources. Any information source not judged appropriate for permanent addition to the library's collection, but required by a library patron on a single-use basis.

b. Interlibrary loan (ILL). "A transaction in which, upon request, one library lends an item from its collection, or furnishes a copy of the item, to another library not under the same administration or on the same campus."

c. Conventional interlibrary loan. Interlibrary loan practices which are carried out through established or traditional methods such as the use made of bibliographic utilities (OCLC), the reciprocal exchange agreements made with other libraries, etc.

d. Information retailers. Commercial or self-supporting enterprises which provide information and/or information services.[3]

e. Periodical. "A serial appearing or intended to appear indefinitely at regular or stated intervals, generally more frequently than annually, each issue of which is numbered or dated consecutively and normally contains separate articles, stories, or other writings." For the purposes of this report periodical will denote magazines, newsletters,journals, and newspapers.

f. Document. In this study "document" will refer exclusively to any part of a periodical.

g. Document procurement or information procurement. The obtaining of external information resources.

h. Document delivery. "The transfer of a document or surrogate from a supplier, whether a library or a document service to a requesting library" or user.[4]

i. Document delivery service. "In information retrieval systems, the provision of documents, published or unpublished, in hard copy or microform, at an established cost upon request."

j. Document delivery supplier. An organization which provides document delivery services.

k. Commercial document delivery. The use of information retailers to provide document delivery services.

l. Bibliographic database. "A database consisting of computer records that represent works, documents, or bibliographic items."

m. Database producer. The private or public organization which produces a bibliographic database.

n. Delivery time. "The number of days (calendar or business)

between the day a document delivery request is sent to a supplier and the day it is received from the supplier by the library."[5]

o. Fulfillment time. The number of days (calendar or business) between the day a document delivery request is initiated by the user and the day the document is actually received by the user's library.

## D. Importance of the Study

Existing conditions in libraries, information science, and the CSB Library itself, prompt the investigation of commercial document delivery services. With the explosive generation of information now occurring in all fields, even the largest university and research libraries are not totally able to meet the needs of every information user from their existing collections. Consequently, the capability of providing "timely access" to information outside the library has been viewed as a viable alternative to actual ownership of certain information sources. The almost universal existence of interlibrary loan departments in libraries is an example of this philosophy.

### 1. Increased User Awareness

Increased numbers of users are aware of more information sources at increased speeds. The CSB Library, as well as many other libraries, seeks to increase users' awareness of available information by: (1) subscribing to online bibliographic data bases which index a broad spectrum of published information pertinent to the researcher, and (2) attempting to deliver as much of this information as can be borrowed from other libraries through interlibrary loan. The ability to provide access beyond the library's on-site collection is critical to student and faculty researchers.

2. Limitations of Interlibrary Loan

Though a valuable service, interlibary loan has some definite limitations. While today's telecommunications technology enables the interlibary loan staff to locate and order periodical articles, books and reports instantaneously, a system for equally fast delivery of these materials is still needed. Under present conditions, the timely arrival of the ordered items is dependent on a series of factors ranging from the willingness of the lending library to circulate the material to the speed with which their chosen carrier (usually UPS or the U.S. mail) can transport it. As a result, the interlibrary loan user at CSB, for example, must anticipate a lead time of one to as much as five weeks when planning to use material not available in the on-site library collection.

3. Improved Utilization of Library Resources

While periodical subscription costs rise as much as 8 percent per year,[6] not all titles will receive enough use to mandate purchase, maintenance, and storage. Library budgets for materials, staffing and library space can be utilized more efficiently by relying to a greater degree on interlibrary loan or other document delivery services rather than storing lesser used but essential titles.

The CSU system has also recognized this problem of limited resources.

> The growth of the materials added to the collections of the CSU libraries has far outstripped the finite library space available for satisfactory accommodations. This state of affairs has negatively impacted the library patrons through a lack of accessibility to information which they require in support of teaching and research at each campus. It is important to note, moreover, that in addition to the growth of collections there are emerging

changes and constraints which require new approaches to information access."[7]

4. Changes in the role of Libraries as Information Providers

There is a need for libraries to reassess their roles as information providers. C. Rochell, Dean of the Libraries, New York University, New York, states "...libraries need to reorient themselves to a world in which collecting information is of less concern than transmitting and providing access to it."[8]

5. Improved and Available Technologies

Alternate document delivery is becoming an increasingly viable alternative for the academic and public library world. This is evident from meetings held at the American Library Association's 1985 Annual Conference--"Document Delivery: Technologies and Strategies for Libraries in the Mid-1980s," and a similar session on traditional interlibary loan practices and the new fee-based services.[9]

Used predominantly by corporate and other special libraries, the technology and services to provide enhanced document delivery are now available to a much wider audience. Because the technology is improving, prices are more reasonable and practical for the academic and public library community and the general information user.

In addition to the preceding general points, there are specific reasons why the study of document delivery is appropriate for the CSB campus.

a. CSB's collection is relatively small in comparison to larger academic libraries, so the need for off-site collections is even more important.

b. The CSB campus is geographically isolated. The college community does not have the level of access to other research collections as those in larger metropolitan areas.

c. CSB's quarter system limits the usefulness of time consuming conventional interlibrary loan for CSB users.

d. The CSB Library has an expanding bibliographic database service which generates the need for more extensive collections or for enhanced document delivery.

e. Other alternate document delivery methods are not established at CSB such as system courier services, etc.

f. The CSB Library is sufficiently small that implementing an alternate document delivery plan would be relatively easy with immediate and beneficial impact.

g. Enhanced document delivery is a relatively low cost solution compared to other library storage techniques. Also, enhanced document delivery is not dependent upon increased FTE and thus is a resource which can be effectively used now, without actual increases in enrollment.

h. Enhanced document delivery has the potential for helping meet new demands as CSB programs and service regions increase. Issues of accreditation, program evaluation, and the value of CSB's degree may all be impacted by the off-site collection provided its students. In fact, such provisions may even help in competing for student enrollment. Hugh Atkinson, University Librarian of the University of Illinois, states:

> ...the new technologies that solve some of our economic and space problems may provide to "rival" institutions the ability to compete with us directly for our students. . . . The new technologies may be the electronic means to supplement

essentially meager institutional resources with uncontrolled access to the resources of larger and more well established institutions. It seems to me that the state accrediting and licensing agencies, as well as the regional associations, have to take cognizance of such in their accrediting and licensing activity." [10]

## III. REVIEW OF RELATED LITERATURE AND PRESENT STATE OF DOCUMENT DELIVERY

### A. Literature Review

A thorough account of document delivery is found in Boss and McQueen's 1983 Document Delivery in the United States,[11] commissioned by the Council on Library Resources. This study focuses specifically on the physical movement of information materials from supplier to requestor and not the broader area of interlibrary lending.

Interlending and Document Supply,[12] one of the few journals devoted solely to document delivery, carries an on-going bibliographic essay. Written by Kefford and Bennett. This review of recent document delivery literature provides useful information concerning U.S., foreign, and international developments in document delivery.

Wood's "Private Sector, Non-Library Document Delivery Services"[13] is a short but basic explanation of commercial document delivery. Other discussions of various alternate document delivery methods, technologies, and services can be found in Gordon's "Acquiring Full-Text Documents: The Information Specialists's Ongoing Problem," and Barden's "The Transmission of Interlibrary Loan Requests: A Review of Methods, With Comments on Their Use at the British Library Lending Division."[14] Saboe's "Document and Information Delivery in the USA"[15] gives a somewhat disjointed account of commercial document delivery service. Brief descriptions of selected document delivery services and suppliers are found in

Tucci's "Online Ordering of Sci-Tech Materials," Popovich and Miller's "Online Ordering with Dialorder," and Colbert's "Document Delivery."[16] It should be noted that many of these descriptions were prepared by information retailers or special/corporate librarians and thus do not provide an academic viewpoint.

Criteria for establishing and evaluating any document delivery system are similar, usually focusing on cost, speed, quality, and reliability. The Boss and McQueen study reflects some of these criteria. Other useful discussions of criteria are found in Fjallbrant's "What the User Wants in a Document Delivery Service," Gates's Electronic Document Delivery: A Study of the Relationship Between User Needs and Technology Options, Tannehill's Factors in Document Delivery: An Analysis Based on Experience at Chemical Abstracts Service, and Line's "Document Delivery, Now and in the Future."[17]

An academic library model for commercial document delivery is found in a report by Hurd and Molyneux entitled "An Evaluation of Delivery Time and Costs of a Non-Library Document Delivery Service."[18] The authors compare a private sector, non-library supplier with other conventional ILL suppliers. The initial results of the study indicate that the commercial document delivery supplier (the UMI Article Clearinghouse) can deliver documents faster than conventional ILL sources. "However, the speed of UMI's service is accompanied by slightly higher costs and some inconsistency."[19] Two areas which were not included in the Hurd and Molyneux study and which should be investigated are comparisons of indirect costs of

different document delivery methods and thus a comparison of total costs (online fees, etc.) rather than invoiced costs only.

Caution should be taken in reading other document delivery comparative analyses. Sue Kennedy of University Microfilms Incorporated summarizes some of her findings in "A Comparison of Commercial Document Delivery and Interlibrary Loan Costs."[20] While the information is useful, University Microfilms does have a major stake in the document delivery market. Perhaps a more objective and varied perspective is one given by Linda A. Willett working as a special corporate librarian.[21] The most significant finding of this report is that using on-line vendors reduced turn around time and total costs incurred.

A number of sources discuss proposed and experimental document delivery technologies. Included in this group are Gurnsey's Electronic Document Delivery-III: Electronic Publishing Trends in the United States and Europe, Griffith and King's "Alternative Technologies and Systems for Distribution of Separates," and Gates' Electronic Document Delivery, already mentioned.[22]

After reviewing the significant literature several points can be made.

1. There are consistant criteria upon which document delivery systems of any kind can be evaluated.

2. Commercial document delivery suppliers and services are used primarily by special libraries.

3. The use of commercial document delivery services and suppliers is a reasonable and potentially viable alternative to conventional document delivery (ILL) in an academic library.

## B. State of the Art in Document Delivery

Boss and McQueen aptly describe the core problem in accessing external information resources.

> "The major barrier to effective interlibrary lending is not the complexity of verifying the bibliographic details of a citation, the intricacy of accessing files of millions of citations to identify a holding location for the wanted item, the potential for administrative and personal suspicion aimed at outsiders wishing to tap an institution's resources, the communication of the loan request from one institution to another, nor the time and cost of processing the request; but the apparently simple process of physically moving the item to be loaned from point A to point B."[23]

While much research has gone into experimental document delivery systems, the actual full-scale implementation of such technologies has not been manifested. Perhaps this is due to the "apparent" satisfaction of the document delivery user. Throughout the literature there appears one theme: document delivery as it stands now is satisfactory but any improvements would be utilized if the cost was not limiting. It has been stated that either people's expectations of document delivery are low or the user just learns to live with this information gap of not obtaining information as rapidly as it can be identified.[24]

The information community in Europe has been the most cohesive in their document delivery research. Many experiments have been funded to study the capturing of information, its storage, retrieval, and delivery (projects such as Hermes, Adonis, Appolo, Artemis, etc.). Electronic document delivery has been at the forefront. Peter Lea gives six reasons for the electronic document delivery research emphasis in Europe:

(1) Existing and evolving technologies;

(2) Publishers interest in monitoring their markets;

(3) Growth of use of on-line bibliographic services;

(4) The appearance of a need for fast, reliable, high quality service;

(5) Intra-government support (e.g., CEC); and

(6) Expansion of new products and markets.[25]

In contrast, the U.S. has not shown this same unified direction. In the United States the development of document delivery has been fractured without any national plan. Separate projects conducted by the Library of Congress and the National Library of Medicine "are aimed initially at in-house access and document delivery to outside users still remains at issue."[26] Boss and McQueen note that "there will be no major changes in the ILL system if individual libraries and consortia continue to function without coordinate planning."[27] Such a coordinated effort was discussed in the 1970's. The National Periodicals Center would have served as a central document holding and delivery center for the United States.

> The most used materials would be made available locally, less frequently used materials would be retained in a dedicated collection which would be accessed by people committed to prompt processing of requests. Materials would be distributed using various methods of rapid document delivery. When it became obvious that the library community was divided on the matter and the commercial sector was strongly opposed, attention shifted to a more decentralized approach based on improving access to existing collections.[28]

Thus the major emphasis has been directed at identifying and locating information rather than speeding delivery of information.

In 1983, Boss and McQueen foresaw several major document delivery trends which included the

> . . .increased electronic transmission of requests; an increase in the number and percentage of documents provided by commercial services; increased use of surface courier services by commerical services and special libraries; and a "heightened awareness by those using electronic means to locate and request materials that the delivery of documents is the time consuming element in the ILL system, but no significant shift away from present delivery patterns."[29]

The utilization of commercial document delivery has become a stopgap in lieu of more sophisticated technologies. While commercial document delivery is not a new concept, there is little research concerning the usage of commercial document delivery suppliers and even less concerning their use in academic settings. However, it is a clear fact that these services are used extensively by for-profit special libraries and to a lesser extent by some academic and public libraries. James Wood from Chemical Abstracts Service stated, "It is apparent that the private sector, non-library suppliers have captured a significant share of the total document delivery traffic." [30]

## IV. DESIGN OF THE STUDY

### A. Components of Methodology

The research methodology employed in this study included five components: (1) a review of the development and current operations of CSB's ILL service, (2) an analysis of patron's external resource demands at CSB, (3) a review of significant literature,(4) a performance evaluation of the document delivery aspect of CSB's ILL service, (5) a survey of document delivery suppliers identified as potentially capable of meeting CSB's document delivery needs.

#### 1. Review of CSB's ILL Service

CSB's ILL service, including its development and current operation, was investigated in order to provide a basis for later comparison with alternate document delivery services and suppliers. Information was obtained through interviews with current ILL staff members as well as through a review of internal and CSU system-wide memoranda, reports, and statistics from ILL and library administration files.

#### 2. Analysis of External Resource Demands at CSB

Information for this component was compiled and analyzed from the 1,053 periodical ILL requests submitted to the CSB Library in 1985. (ILL requests for books were excluded.) Information gathered from these requests included: (a) title of periodical, (b) subject of periodical, (c) year of publication, (d) number of pages in article, (e) source of citation, (f) number of the supplier filling

the request, (g) whether user was willing to pay for photocopying charges, and (h) borrower status.

The PFS:FILE, Version B software[31] program was used on an IBM PC microcomputer to assist the researchers in analyzing the information. Most of the information needed was supplied on the regularly used ILL form with the exception of the "subject of periodical." Periodical subjects were assigned first, on the basis of the periodical name and secondly, on the basis of the title of the article. The subjects assigned were taken from the "Academic Offerings" list found in the current CSB Catalog.[32]

3. Review of the Literature

Databases and indexes searched included Library Literature, ERIC, Social Science Citation Index, NTIS, Education Index, ABI/Inform, and Library and Information Science Abstracts (LISA). An extensive bibliography was compiled and reviewed. Key subject terms included: document delivery, document supply, electronic document delivery, electronic mail, full-text databases, information brokers, interlibrary lending, interlibrary loans, online services, and telefacsimile.

4. Performance Evaluation of CSB's Document Delivery Service

The document delivery aspect of CSB's ILL service was evaluated using the same criteria as applied in the authors' evaluations of alternate document delivery suppliers. ILL statistical data and subjective estimates from ILL staff relating to fulfillment time, reliability, product quality, and cost were analyzed.

### 5. Survey of Commercial Document Delivery Suppliers

To obtain a list of suppliers that could potentially serve CSB's document delivery needs an unstructured questionnaire was sent to 69 document delivery services and suppliers. These suppliers appeared to meet the authors' basic requirements as stated in "Limits of the Study," (Chapter II.B). (A sample of the questionnaire is included in Appendix B of this report.) In response to the survey, suppliers generally sent a letter and other literature describing their services. This was also followed by a phone coversation between the authors and the supplier representative.

The organizations selected for the survey pool were taken from Document Retrieval: Sources and Services, Information Sources: 1985,[33] as well as other fliers, announcements, etc. Of the 69 investigated, information was obtained for 35 suppliers or services. After further study, eight suppliers were selected as the most feasible based on CSB's external resource needs and potential compatibility with CSB's existing document delivery methods.

## B. Limitations of Methodology

As previously stated, this study represents only an initial exploration of alternate sources of document delivery for CSB users. Thus, this first investigative phase primarily focused on information gathering rather than experimental research. (While a number of measuring devices would have been useful such as a user survey, the time limitations of this study did not allow for such methods to be used.) To obtain the needed information, the methods which were used

included descriptive, observational, and evaluative research. These methods are defined as follows:

Descriptive research. A research method which is "based wholly or partly upon the direct observation and subsequent description of whatever was observed."[34]

Observational Research. A research method which "involves noticing something and giving it significance by relating it to something else noticed or already known."[35]

Evaluative Research. A research method used to "obtain objective and systematic evidence or failure of library projects and programs."[36]

Such methodology has been termed "action-research." The goal of action research is "to obtain knowledge that can be directly applied to the local library/information center to increase organizational effectiveness." Action research "uses existing measures, with minimal controls over reliability and validity; emphasis is on practical significance rather than statistical significance."[37]

The two major limitations to the data presented concern the analysis of the and the reporting of supplier services. ILL requests from one year only were analyzed. ILL request activity can vary from year to year, dependent especially on faculty research. Because of this, the data received from the ILL requests can provide only a general idea of CSB's periodical document delivery needs. In additional phases of this investigation, it would be beneficial to analyze at least two more years of ILL requests. Second, the information provided the authors by the suppliers varied in terms of detail and quantity and because of this, the descriptions of suppliers which follows later in the report lacks some uniformity.

## V. PRESENTATION OF FINDINGS

The basic question which eventually led to the undertaking of this study was whether procurement and delivery of a significant portion of ILL requests could be done faster, yet still cost effectively, by utilizing commercial information suppliers in place of conventional ILL. While a conclusive answer to this must await a further evaluation of commercial information suppliers (as suggested in Chapter VIII Recommendations), the authors have explored the relevant background issues by 1) reviewing the development and current operation of CSB's ILL service; 2) analyzing patron's external resource demands at CSB; 3) reviewing the significant professional literature relating to document delivery; 4) attempting to evaluate the performance of the document delivery segment of CSB's ILL service; and 5) surveying document delivery suppliers identified as potentially capable of meeting CSB's document delivery needs. The findings resulting from these investigations are presented in the remainder of the section. An analysis and interpretation of this information is presented in Chapter VI.

### A. Development and Current Operation of ILL at CSB

Interlibrary loan is the CSB library's standard method of obtaining information sources unavailable in the library and not judged appropriate for permanent addition to its collection. Thus, ILL represents the current "state of the art" in document procurement and delivery at CSB.

1. Growing Reliance on External Resources

The CSB Library has become increasingly involved with interlibrary loan over the past 15 years as the service has improved in speed and efficiency. This growing reliance on interlibrary loan has been a logical development since the Library operates under many of the conditions and limitations that this type of interlibrary resource sharing was originally conceived to address. The most significant of these are limited collection resources and geographical isolation.

Though the Library's collection size per student is impressive at 102.1 volumes (compared to a CSU system average of 47.1), in actual size the Library's 260,000 volume collection ranks 18th out of the 19 libraries in the CSU system and falls short of meeting the complete research needs of CSB faculty and students.[38] Sometimes these needs are for highly technical, specialized, or esoteric items for which the demand is too low to justify acquisition by the Library. Consequently, interlibrary lending arrangements assist the Library in providing its patrons access to a greater wealth of resources without having to bear the associated costs of ownership. Avoidance of acquisitions, maintenance and storage costs are all possible as a result of the Library's participation in ILL.

Exhibit 1 compares ILL activity levels over a nine-year period for CSB, the CSU system, and the five CSU libraries possessing the smallest collections. The number of ILL requests submitted for each 100 FTE at CSB is represented by the top line on the graph; the combined average of ILL requests for Stanislaus, Bakersfield, Humboldt, Dominquez Hills, and Sonoma, the five libraries with the

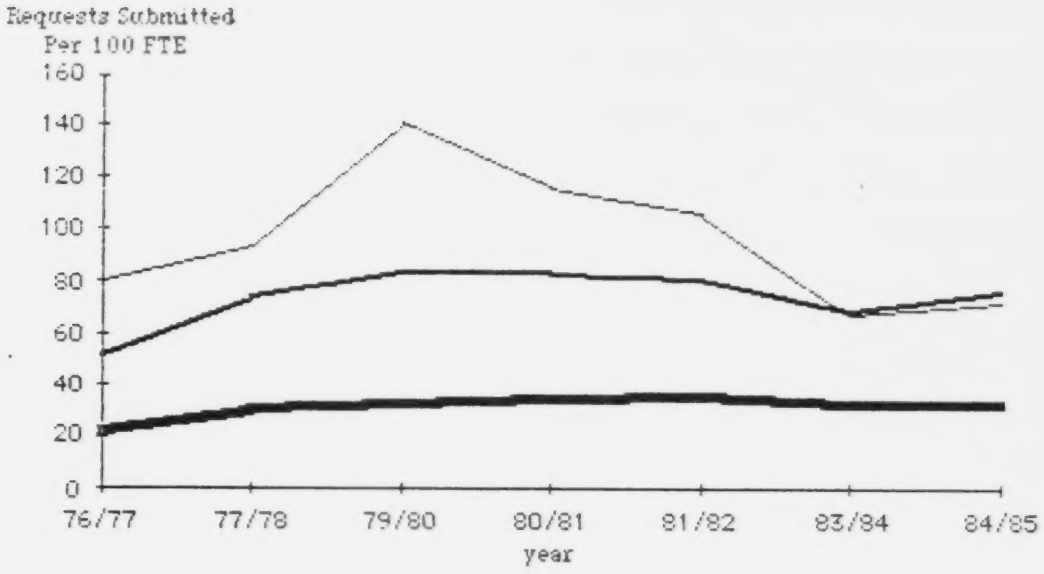
smallest collections, is illustrated by the middle line; the CSU system average per 100 FTE is shown on the bottom line.[39] As Exhibit 1 indicates, CSB's level of ILL borrowing is much higher than the system average as is the case for other CSU libraries possessing small collections.

CSB shares with several other campuses in the CSU system certain problems associated with geographical isolation. When user demands exceed the limits of a small library in the Los Angeles or San Francisco Bay area, regions well endowed with university and research libraries, patrons can be easily referred to larger or more specialized collections. This is not a practical alternative for CSB patrons who must drive a hundred miles to find a larger library. Thus ILL has provided a vital service to CSB patrons.

Exhibit 2 compares ILL activity for CSB, the CSU system, and the five most isolated (at least 100 miles away from a larger library) CSU libraries. As in Exhibit 1, the number of ILL requests submitted for each 100 FTE at CSB is represented by the top line on the graph; the combined average of ILL requests for Humboldt, Chico, Fresno, Bakersfield, and Stanislaus, the five most isolated libraries, is illustrated by the dotted middle line; the CSU system average per 100 FTE is shown on the bottom line.[40] As shown in Exhibit 2, CSB's level of ILL borrowing exceeds the CSU system average as does that of other isolated CSU libraries. It is interesting to observe that while ILL activity for both the "small collection" group and the isolated group are higher than the CSU average, activity is notably higher for the "small collection" group.

EXHIBIT 1

ILL Activity for CSB, CSU system, & Small Collections

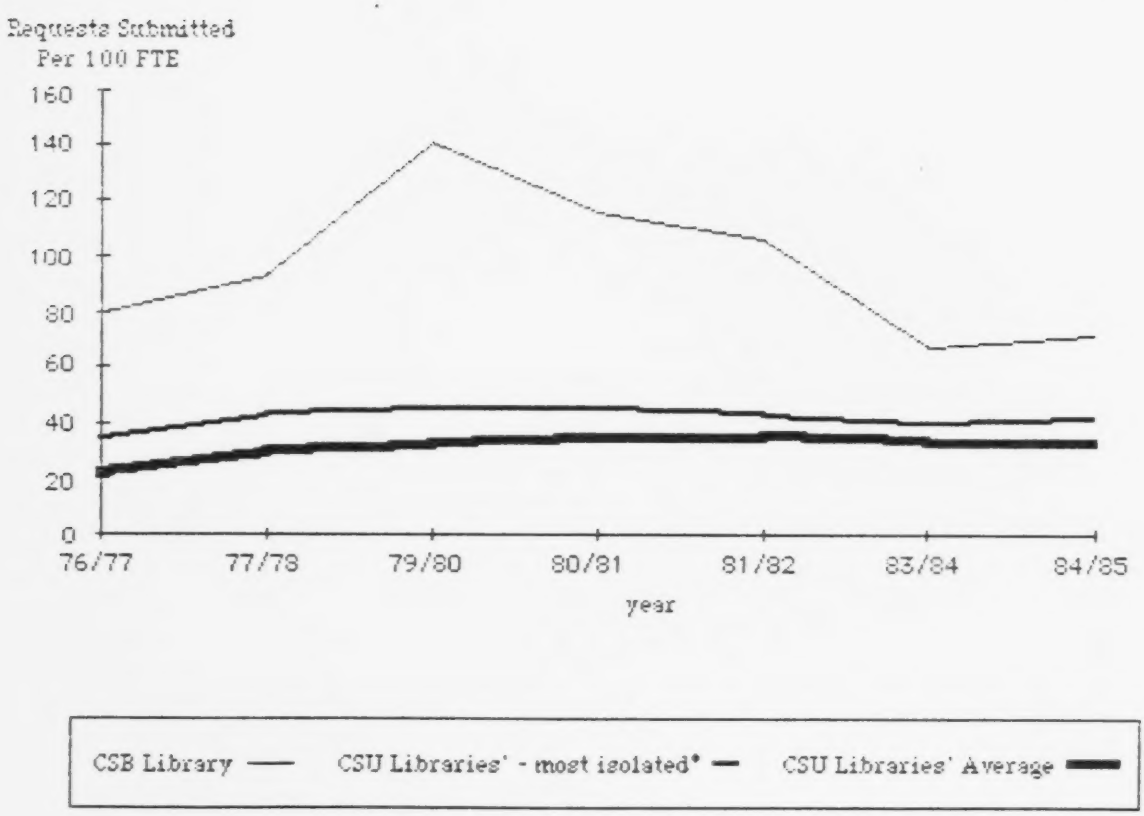



CSB Library —— CSU Libraries with Smallest Collections* —— CSU Libraries' Average ▬

*CSU Libraries containing the smallest collections are:
Bakersfield
Dominguez Hills
Humboldt
Sonoma
Stanislaus

EXHIBIT 2

ILL Activity for CSB, CSU System, and Most Isolated CSU Libraries




*CSU Libraries' in the most isolated areas are:
Bakersfield
Chico
Fresno
Humboldt
Stanislaus

## 2. Key Developments in ILL Service at CSB[41]

Though the value of ILL service has long been recognized by library administrators, ILL staffing is not recognized in CSU funding formulas for libraries. In the absence of system-level funding, libraries have had to draw from other personnel budget lines to staff their individual ILL operations. As a result, CSB's ILL operation developed slowly beginning as an extra 5 to 10 hour-per-week assignment for a reference librarian prior to 1976, growing to a nearly full-time job for a clerical-level staff member by 1978, and finally becoming the sole responsibility of a Library Assistant 1-level staff person in 1985.

Despite funding and staffing obstacles, the library's ILL service has steadily improved over the years as organizational and technological innovations have occurred. The following key developments have played a part in shaping CSB's current ILL operation.

1973 - **Annual publication of the CSUC Union List of Periodicals**. Because the essential step in the ILL borrowing process is the identification of libraries which own and are willing to lend the desired material, holdings lists for libraries and library networks such as **The CSUC Union List of Periodicals**, are valuable ILL tools.

1975 - **Availability of the CSUC Library of Congress Card Number Index**. The issuance of this index provided a rough way to locate approximately 500,000 books held by several CSU libraries.

1976 - **Inauguration of the CSU's ILBS service**. The CSU system fostered significant advancements in both ILL ordering and delivery with th creation of ILBS (Intrasystem Lending and Borrowing Service).

Via system-funded telefacsimile machines made available to each CSU library, completed ILL request-forms could now be transmitted between libraries in the system over phone lines rather than by mail. A system-wide contract with United Parcel Service was initiated with the goal of providing 24-hour delivery service for campuses within the Los Angeles or San Francisco Bay areas and 48-hour service for the remote campuses such as CSB. While this delivery-time goal is seldom achieved according to CSB's ILL staff, the ILBS program, nonetheless, represented an improvement in delivery speed.

**1977 - Online bibliographic database searching formally authorized at CSU libraries.** With printed bibliographies for patrons as their end product, computer searches are popular and generate additional "business" for interlibrary loan.

**1978 - An OCLC terminal was obtained by the CSB library.** OCLC (Online Computer Library Center), the world's largest bibliographic utility with well over 10 million bibliographic records, was first established to aid member libraries with cataloging. Its vast database became equally valuable as a union catalog of the holdings of its members making it an essential locating tool for ILL departments. CSB's acquisition of an OCLC terminal brought online access to millions of titles.

**1979 - OCLC introduced its ILL Subsystem.** OCLC enhanced its value to ILL operations in 1979 by developing an electronic ordering capability and introducing it as the ILL Subsystem. The most notable feature of this ordering function is its ability to automatically forward a borrowing request to a second library if the first-contacted library is unable to fill it. This process may be automat-

ically repeated for up to five libraries on a single request. With its advanced searching and ordering capabilities, the OCLC ILL Subsystem has become the foundation of CSB's ILL operation.

1980/81 - **CSB Shelflist Conversion**. In preparation for the projected automation of library circulation functions and eventually of the card catalog, a retrospective conversion of cataloging records to machine readable form was undertaken. This project more than doubled the number of titles from the CSB collection that now appeared in the OCLC database. The result was an increased number of ILL requests received by CSB from other libraries.

1983 - **CSB began fee-based ILL services**. Escalating demands on CSB's ILL operation from borrowing libraries coincided with library funding cutbacks and prompted the creation of a plan to begin charging for services which were previously free. Fees were nominal, did not apply to CSB patrons, and did not apply to other CSU libraries. Since this practice soon became widespread, it had little impact on the number of requests which continued to come in from borrowing libraries.

1984 - **CSB began experimental use of UMI document service**. This arrangement with University Microfilms International marked the first attempt by CSB's ILL department to use a commercial document supplier to fill some patrons' serials requests. CSB's ILL staff have limited their use of UMI primarily to filling requests involving a large number of photocopied pages and some rush requests.

1985 - **Installation of OCLC IBM PC-based ILL Micro Enhancer**. OCLC began marketing a modified IBM PC microcomputer as the M-300 Workstation which doubled as both an OCLC terminal and a micro-

computer on which OCLC-developed ILL software could be run. With the M-300 and software, CSB's ILL department is now able to do automatic batch updating of files which has resulted in some savings in labor.

### 3. Description of Current ILL Operation[42]

As it is currently organized CSB's ILL service is part of the library's circulation department and is under the direction of an assistant librarian who serves as the head of circulation. Staffing this operation, in addition to the circulation librarian, is a Library Assistant-I who supervises the daily activities assisted by 1.0 FTE student assistant. The current supervisor has been in that position for nearly four years and is well trained in ILL processes.

The ILL work area, which is located in the circulation department work room, is equipped with an IBM-PC which functions as a microcomputer and an ILL terminal via a dedicated line to the OCLC mainframe computer in Ohio. In addition the work area has bibliographic locating sources in print and microform and processing facilities for shipping and receiving library materials.

ILL service is essentially two services—it borrows materials for CSB patrons and it lends materials to other libraries. For the purposes of this study, the authors are concerned only with the borrowing (document procurement and delivery) segment of the service. The borrowing process is briefly outlined below.

ILL will borrow library materials for CSB students, staff, and faculty from any library which participates in this type of resource sharing subject to that library's use-restrictions. Patrons indicate the material they wish to borrow by submitting a request form containing the complete bibliographic citation for the desired item.

The ILL staff uses this information to locate libraries which own and will loan the item. The primary locating source used by the ILL staff is the OCLC database of library holdings records. As mentioned earlier, OCLC is relied on heavily because ordering through this system enables a borrowing library to contact at one time five potential lenders in sequential order. In most cases lenders can be located and the item ordered in a single search session using OCLC. Other locating sources include the National Union Catalog, National Union Catalog Pre-1956 Imprints, Union List of Serials of the California State University System, California Academic Libraries List of Serials, The Pacific Southwest Regional Medical Library Service Resource Libraries Union List of Serials, and UMI Article Clearinghouse Catalog. Material not ordered via OCLC is generally requested by way of an American Library Association standardized request form which is mailed to a single holding library at a time.

Once the borrowing request is transmitted to potential lenders, the ILL staff must wait for one of them to respond. When OCLC is used a responding library will notify CSB of its intent to fill the request and will normally have the material enroute to Bakersfield via mail or UPS shortly thereafter. If the first library does not respond after four days, the request automatically moves on to the next library in line. Once the requested item arrives, ILL staff members notify the patron by phone and, if unable to make contact, mail it directly to the patron's address. When CSB is charged a copying fee by the supplying library, the charge is passed along to CSB patrons at a subsidized rate of $.10 per page.

## B. Patrons' External Resource Demands at CSB

CSB ILL periodical request forms for 1985 were analyzed, yielding the following findings. (See Appendix A for more complete data.)

1. Subject of Periodical Requests. Requests in the social sciences encompass the largest segment of periodical interlibary loan requests at CSB. Requests in the humanities and sciences make up the other half. More specifically, the majority of CSB users' periodical requests for external resources fell into the following six subject groups: (1) business (including accounting, finance, management, management information systems, and marketing); public administration, and economics (24 percent of total requests); (2) psychology (14 percent); (3) biology, medicine, and nursing (14 percent); (4) education, physical education, and child development (13 percent); (5) English and literature (8 percent); and, (6) philosophy (8 percent). (One faculty member was responsible for a large portion of management information system (MIS) requests. Considering the importance of currency in the field, this MIS emphasis will probably continue. Another faculty member also requested a large number of the philosophy requests. To ascertain whether this will be a continuing trend more requests would have to be analyzed.) It is interesting to note that the top four subject areas most often requested are also the subject areas having the highest average periodical subscription costs.[43]

2. Date of Periodicals. Sixty-four percent of the periodical articles requested were dated within the last five years and 77 percent were dated within the last ten years.

3. Number of Pages. Most (82 percent) periodical articles requested were between one and ten pages. Only 14 percent of the requests fell between 11 and 20 pages. Ninety-six percent of requested articles were 20 pages or less in length.

4. Source of Citation. Of the 495 requests that contained the source of the citation, 175 (or 35 percent) of the references came from an online bibliographic database search. Other sources cited included various indexes, bibliographies, etc. Actually, bibliographic computer searching was only cited as the source of citation approximately 17 percent of the time (considering the total number of requests). This is not a high enough percentage to comment on database searching as an antecedent to ILL. However, it is significant that the most frequently searched bibliographic databases between 1983 and 1985 cover the same subjects most often requested by ILL users.[44]

5. Willingness to Pay Photocopying Charges. A high percentage (77 percent) of ILL users were willing to pay photocopying fees.

6. Borrower Status. Faculty requests made up 39 percent of the total periodical ILL requests in 1985. Graduate and undergraduate requests were fairly evenly divided at 25 percent and 27 percent, respectively. The other 9 percent includes requests made by staff, "other" borrowers, and requests where such information was not supplied.

## C. Literature Review Findings:

## Criteria for an Enhanced Document Delivery System

In reviewing significant literature concerning document delivery and commercial document suppliers the following criteria emerged. Basically, there are four major factors in evaluating any document delivery system including speed of delivery, cost, product and system quality, and reliability. The following section will analyze each of these factors.

### 1. Speed of Delivery

The speed in which a document is actually received by the requestor is affected by several factors including the time it takes to process and send the initial order, the document delivery supplier's routines, mode and speed of document transmission, supplier's access to information (in-house or off-site), the distance from the supply source and form of information (online, photocopy, etc.). Delivery speed is usually measured by "fulfillment time" or "delivery time." At the very least, enhanced document delivery should offer "reasonable speed of supply--with the possibility of fast transmission for urgently required documents."[45]

But, consistent or predictable delivery speed is a more crucial factor than the actual speed itself.[46] Can the library user be assured that his or her request will be available within a certain period of time? Presently at CSB there is no consistency or predictability. Students are told their ILL request may be filled in one to three weeks and, thus, have no way of planning.

"Dodson's study...found that the average satisfaction time was 11.6 days. The most time consuming element was transit of materials to the requesting library, which averaged 6.3 days."[47] Thus, modes of transmitting requests to document suppliers and the suppliers' method of delivering documents are major factors in determining fulfillment time or delivery speed. The following outlines the basic techniques for accessing commercial document delivery suppliers. The first two methods discussed are used exclusively for ordering documents. The second two methods are used for both ordering and delivery of documents. The last method is used exclusively for delivery.

a. **Telephone (Request)**. Very few public suppliers such as public and academic libraries will take document delivery requests over the telephone. This is due to the type and amount of information needed to process such a requests, including billing information, accurate written records of the bibliographic citations and transactions. A large number of other commercial suppliers will take phone requests, usually at an additional charge. The benefits of using the telephone are apparent. It is fast and proven technology. The disadvantages are that another person must be available to take the call, there is no automatic written record of the transaction, errors can occur from misunderstandings, and communication costs are high.

b. **Electronic Mail (Request)**. Electronic mail (EM) is the technology used to send and receive "point-to-point or multipoint messages, typically using a microcomputer and a cathode-ray-tube terminal with a keyboard and printer. The output may be hard or soft copy."[48] Electronic mail can be used to request materials from a

pre-selected supplier or library, since EM systems are widely used by libraries and information retailers. The OCLC ILL subsystem is actually a form of electronic mail. DIALOG and BRS, the two major computerized bibliographic systems used at the CSB Library, also have electronic mail systems by which citations which are retrieved from a database search (or other known references) can be ordered directly from a supplier. Although used rather infrequently at CSB, CLASS's ONTYME electronic mail system is available to CSU libraries.

"These electronic mail systems provide the following benefits: 1) they make locating a document supplier easy, 2) they speed document requests and responses, 3) they reduce the staff time needed to maintain document delivery requests, and 4) they may reduce staff time needed to verify the bibliographic information in the request."[49] A major advantage of using electronic mail systems linked to online database producers is the elimination or reduction of errors which naturally occur when a cited reference is copied or recopied.[50] One thing must be noted, the use of electronic mail or telephone requests may speed up the request process but does not necessarily enhance other components of delivery.

c. **U.S. Mail Service (Request and Delivery).** While the U.S. Mail Service is used both as a requesting and delivery method today it is most often used for delivery. Electronic mail systems have surpassed conventional mail as a method of requesting documents, but Boss and McQueen found that the U.S. postal service was used 95 percent of the time for document delivery (which includes the delivery of both books and periodical articles).[51] Unfortunately, this was also considered the slowest delivery method.

**d. Telefacsimile (Request and Delivery).** Telefacsimile (facsimile or fax) is the "transmission of a facsimile reproduction by means of electrical signals over telephone lines."[52] Used mainly in business settings, telefacsimile has been used by libraries and library networks primarily on an experimental or limited basis. Now many commercial document suppliers are using telefacsimile.

The first type of telefacsimile, called analog facsimile, has not been viewed as a cost-effective and practical method for sending requests or for receiving documents. Much of this has been due to electrical transmission interference, slow speed, poor quality reproductions (particularly with illustrations, graphs, etc.), too high a unit cost with low usage, the need to first make a photocopy before sending the document through a facsimile machine, and equipment incompatibility.[53] Telefacsimile was used at the CSB Library as a method of transmitting ILL requests within the CSU system for a number of years. Even as recent as 1981, most CSB ILL requests were being transmitted by telefacsimile.[54] CSB experienced the same problems reported by other libraries and when OCLC became available, telefacsimile was displaced. Since that time, new high speed digital facsimile technology offers improved transmission, speed, quality, equipment compatibility features, and cheaper unit costs making it a more viable alternative for both ordering and receiving documents.

In a University of Washington study, the "average cumulative turnaround time for requests" sent from Alaskan libraries to Washington was: "6 percent same day; 32 percent next day; 44 percent second day; 69 percent fifth day." For a group of other requests the

percentage was even better: "23 percent same day; 60 percent next day; 77 percent second day; 82 percent fifth day." Group III facsimile machines "can send a page in 30 seconds or less, depending upon what is being sent," while costs fluctuated from "50 cents to $3.19 per page, primarily dependent on volume of use."[55]

e. Special Delivery Services (Delivery). Special delivery services include commercial courier services providing regular and overnight service. Such services include UPS, Purolator Courier, Emery, and Federal Express. From Boss and McQueen's 1983 study, documents were delivered less than 55 percent of the time by this method.[56] While fast, special delivery services can be very expensive. The CSU system has a contract with UPS for its ILL operations. This agreement does not provide overnight or 24 hour delivery but is faster than relying on the U.S. Postal Service.

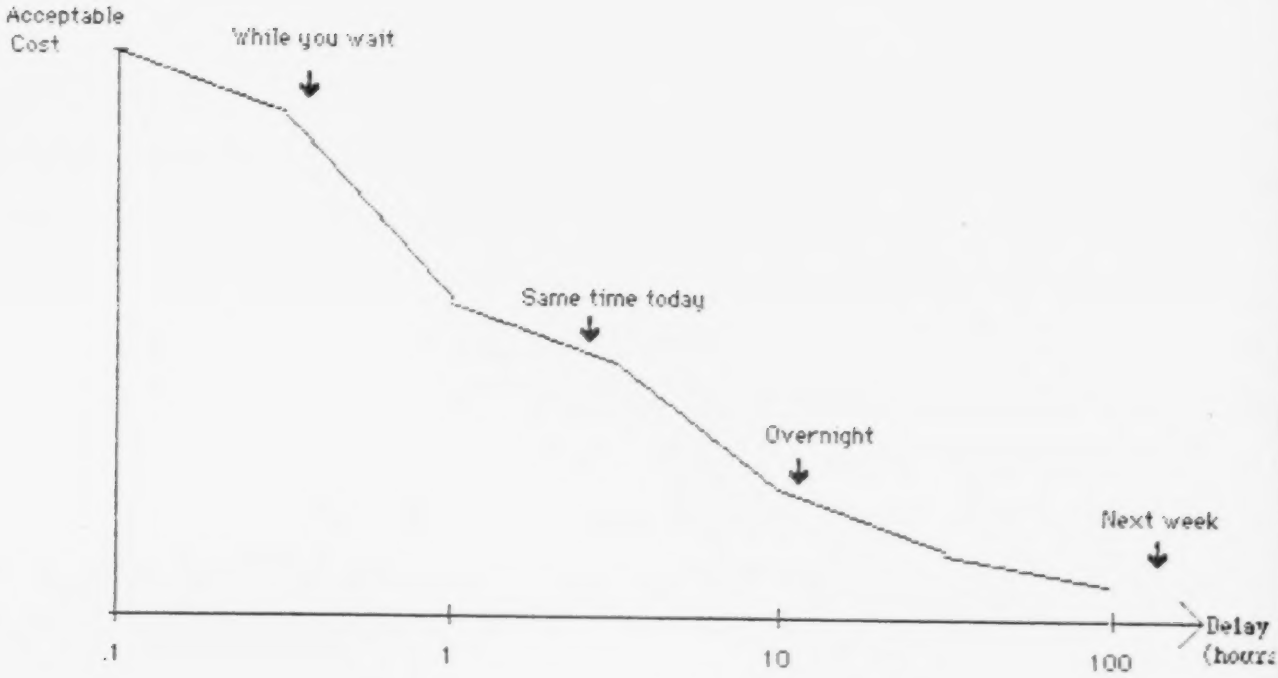
2. Cost

Cost factors can be broken down into ordering costs, supplier's handling charges, and transmission or delivery costs.[57] An enhanced document delivery service should be "priced to compete with photocopying and interlibrary lending services--not necessarily cheaper, but offering perceived added value, e.g., in terms of convenience and speed of delivery."[58] Exhibit 3, provided by A. Norman, demonstrates the user's willingness to pay for quicker document delivery.[59]

According to various published reports, the "total typical" cost for processing an interlibrary loan request through conventional methods ranges anywhere from $6.00 to $16.00.[60] From this wide range of "typical" costs for requesting a periodical article, it is unclear at what point commercial document delivery becomes competitive with

EXHIBIT 3

USER WILLINGNESS TO PAY FOR QUICKER DELIVERY




Source: Adrian Norman, Electronic Document Delivery: The Artemis Concept for Document Digitalisation and Teletransmission (Oxford, England: Learned Information, 1981), p.19, figure 2.3.1.A

traditional methods or even if such costs can be compared. Usually, it is thought that with commercial document delivery you are paying higher prices for faster service. However, one study, by Tannerfeldt and Akerman, did not substantiate this premise. In examining "the costs of online ordering from nine suppliers...costs varied considerably for different suppliers, and [it was] concluded that efficient service with regard to satisfaction rate and speed of delivery was not related to high cost."[61]

In using alternate document delivery the user pays for the service not just the photocopy of an article. Along with delivery charges you are paying for storage, personnel time, computer time, and the service itself. In conventional ILL many of these costs are hidden or not recognized because of reciprocal resource sharing agreements. But in utilizing a commercial document delivery service these charges are either figured in at cost or in the base price. Copyright royalty fees are another factor that becomes more apparent too. Under the Fair Use Clause of the Copyright Law, libraries do not generally make royalty payments to publishers or the Copyright Clearance Center (CCC). However, in using a private document delivery service, the royalty fee is passed on to the requestor.

The cost of each periodical request is also affected by the subject of the periodical requested since the average price varies from subject to subject. Thus document delivery may be more cost effective depending on the subject of the material being requested.[62] Other factors affecting the costs of commercial document delivery include the number of pages in a requested article, type of subject material being requested, discounts and/or deposit accounts offered

for volume customers, and the ability to link up with communication systems already in use.

3. Product and system Quality

Product quality deals with the readability, availability, and value of a document. Document copy can be received in any number of formats or any number of delivery modes such as printed hard copy, photocopies, reprints, microform, or digital online full-text which is provided via a computer and printer. In any of these formats the system should be able to "offer adequate reproduction of text, drawings and illustrations, both on-line and off-line."[63] Other factors of quality include: ease in using the system, reliability of the system, supplier feedback on requests (status reports), and accounting and record keeping capabilities. A "preview or scanning" capability for assessing the usefulness of the material requested is very useful but this is more a function of databases and indexes which provide very precise indexing, descriptive abstracts, or full-text searching capabilities.

4. Reliability

Reliability refers to the likelihood that a supplier will have the requested document in its holdings or can access it and expedite its transmission to the user in a timely fashion. The measure of reliability is often determined by a fulfillment or satisfaction rate--the percentage of requests received by a supplier that are filled. Fulfillment rate is usually dependent on the scope of the supplier's holdings by subject and date, prior knowledge of what is available to the user, either in an online or published catalog, and accessibility to materials (on or off-site access).

## D. Literature Review Findings:

## Commercial Document Delivery Suppliers

Briefly, document delivery suppliers can be classified into one of five categories: (1) conventional public or academic libraries; (2) special libraries; (3) information brokerage services; (4) online database producers; or (5) clearinghouse suppliers.

### 1. Conventional Suppliers

Most public and academic libraries have some type of document delivery service usually handled by an interlibrary loan department. While conventional libraries were not excluded from this study, the primary concern was to find suppliers which were in the business of supplying information rapidly. Some interlibrary loan departments in large academic, public, and national libraries have such fee-based programs. These conventional suppliers have large multi-use collections but generally cannot offer guaranteed fulfillment or speedy delivery.

### 2. Special Libraries

Special libraries or information centers are supported by corporations, businesses, industries, government agencies, associations, research institutes, and other special interest groups. These are libraries with specialized subject collections. Most special libraries are established to support the work of the parent organization but as part of their work may also provide fee-base document delivery service to other outside users. The proprietory nature of some information may exclude such provisions. Special libraries often have collections with depth, but again, their primary concern is the parent organization. Special libraries are often the primary users

of other types of commercial document suppliers, providing special libraries with access to larger collections.

3. Information Brokers and Information Services

Information brokers and information services are for-profit organizations which assist individuals or groups with numberous information problems by doing research, establishing information systems, performing bibliographic database searches and providing document delivery service. Some brokerage firms are small, run by one or two individuals. Others are large companies. Such information services usually provide a guaranteed response time but document delivery may be only one of many services provided. They usually state that they can deliver any information requested because they obtain information from other conventional and special libraries. They have no or limited in-house holdings but instead draw upon other collections.

4. Online Database Producers

Online database producers are indexing organizations which produce computerized and printed bibliographic databases of references and possibly abstracts of literaure in special subject fields. Often these database producers, which may be publicly or privately funded, acquire publishers' authorization (paying copyright royalty fees) to make photocopies of the articles and distribute them. This type of supplier has access to a dedicated, single-use collection but usually of a specialized nature. An advantage to using such a supplier is that bibliographic searching, locating, and delivery can all be handled through the same service. If a particular database is used frequently, using such a service for document delivery is logical.

More database producers are entering the online full-text market. These database producers input in a machine readable form, the actual text of periodicals, reports, and books. Thus the user can search, locate, access and print the actual full-text of the article all at one computer terminal/printer workstation. Full-text provides the reproduction of the narrative sections but usually without graphics and illustrations. Research is being conducted to also provide illustrations through the use of optical disk and digital scanning technologies, etc. While online full-text certainly is a possible methods of document delivery it is not specificlly covered in this report and deserves a separate investigation.

5. Clearinghouse Suppliers

Clearinghouse suppliers serve a similar function as do large academic, public, national, or regional libraries in that they are a large central storehouse of information on which smaller institutions can rely. Clearinghouses, however, are different in that they are not actually libraries but rather for-profit document delivery suppliers. The clearinghouse's main function is to be a supplier, using a dedicated single-use collection to supply photocopy or reprints of materials. Often these collections cover a broad range of subjects but may not have the depth of some collections or suppliers.

## E. Evaulation of CSB Document Delivery (ILL)

The focus of this study was limited to the document procurement and delivery aspects of CSB's ILL service. As defined earlier, this means in practical terms the ordering and obtaining of periodical literature. Though this aspect is just one portion of total ILL borrowing, it is a very significant portion as Exhibit 4 indicates. Exhibit 4 shows the amount of ILL borrowing resulting from periodical requests in relation to the total volume of ILL borrowing over time.[64] As illustrated, periodical requests account for the major portion of ILL borrowing. For this reason CSB's performance record on document delivery merits investigating since it has a significant impact on the library's ability to meet patrons' needs for external information resources.

In attempting to make a performance analysis of CSB's existing document delivery service, the authors applied the same measures as have been used in evaluating the potential of commercial information suppliers: speed of delivery, cost, product quality, and reliability.

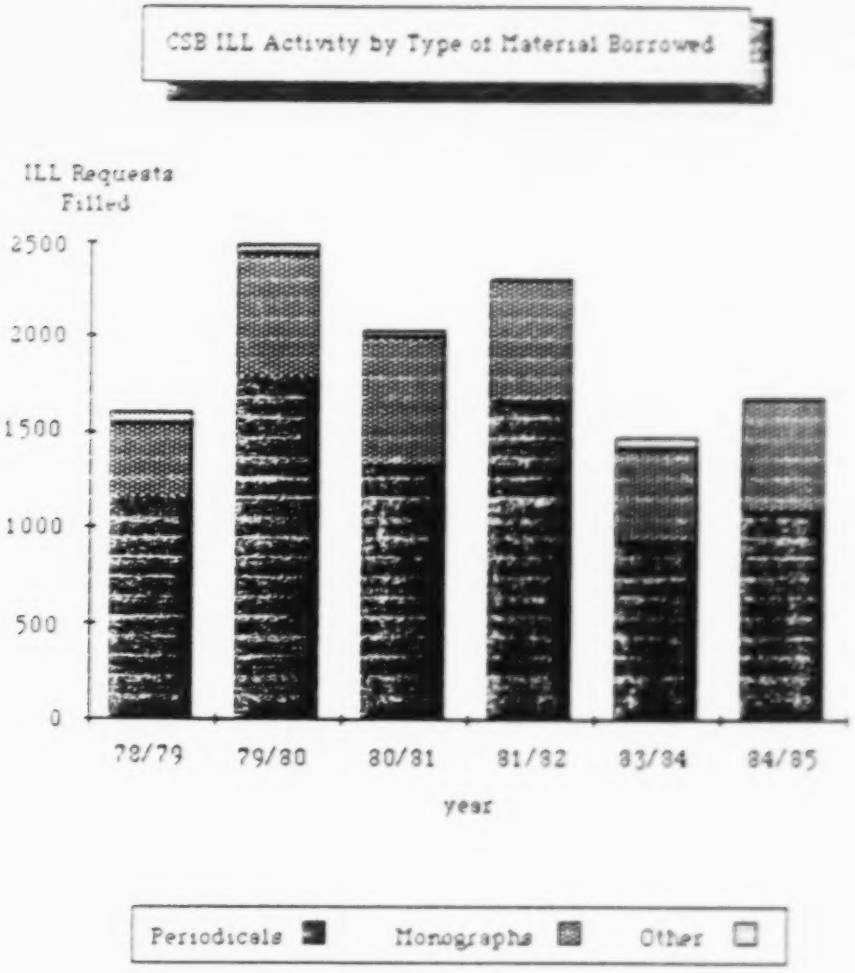
### 1. Speed of Delivery

The Library's Interlibrary Loan Information Sheet, an information handout for patrons, contains the following estimate of request fulfillment time.

> "Generally, if an item is available from a library in the California State University (CSU) system, it can be obtained in 5 to 10 working days. Loans requested from out of state take about 10 days to 2 weeks to fill. Requests that must be sent out by mail rather than via the computer network require 3 weeks or more to fill.[65]

These time-estimates are based on the experience of ILL staff members; there is no direct statistical data in ILL files to support

EXHIBIT 4


CSB ILL Activity by Type of Material Borrowed
ILL Requests Filled
2500
2000
1500
1000
500
0
78/79
79/80
80/81
81/82
83/84
84/85
year
Periodicals
Monographs
Other

them. In the absence of directly supporting data, the authors attempted to make an estimate of actual delivery speed based on analysis of some related data obtained from ILL request forms. A brief review of OCLC ordering procedures is helpful in understanding the data from these forms.

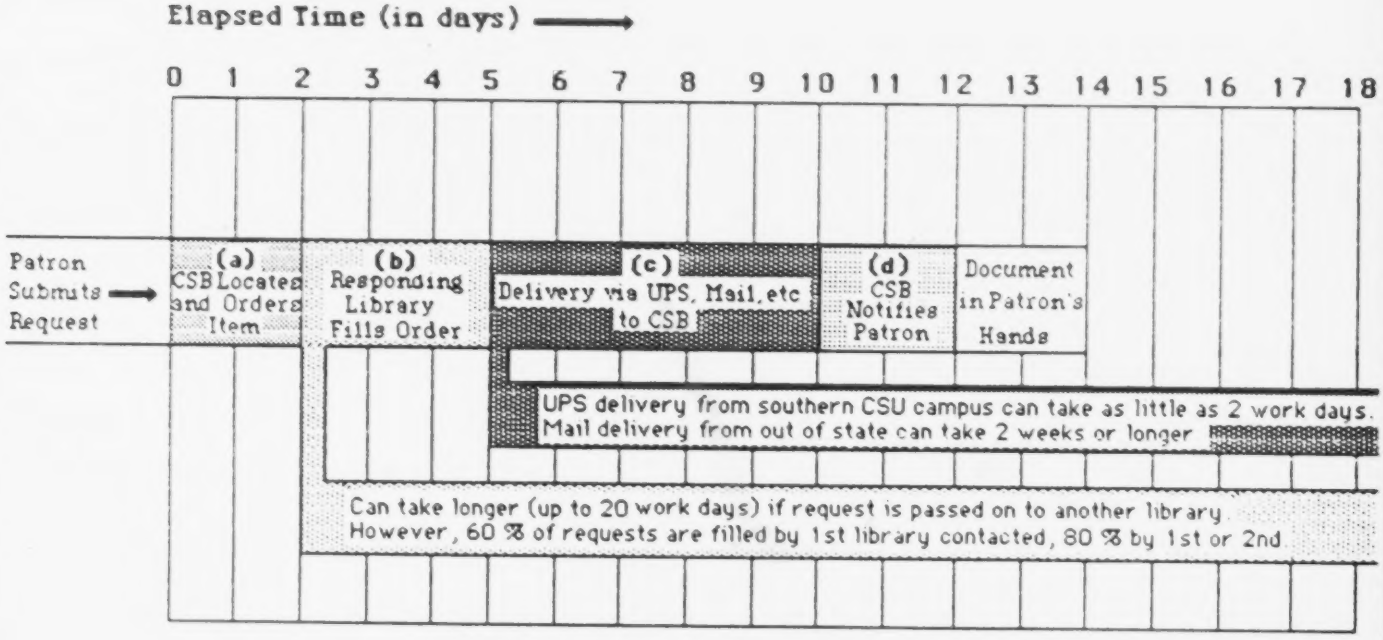
When ILL requests are made using the OCLC electronic network, five potential lenders are queried, in sequential order. Each library has four days to respond before the request automatically advances to the next library in the queue. The library which actally fills the request and its position in the queue are noted on each ILL request form. From these forms the authors gathered data on the percentage of requests that are filled by the first library contacted, the percentage of requests not filled until advancing to the second library, and so on.

According to the data tabulated from the request forms, 63 percent of CSB's borrowing requests are filled by the first library contacted, 20 percent are filled after going on to a second library, 7 percent are not filled until the third library contacted, 4 percent must go on to a fourth library and 4 percent to a fifth library. (See Appendix A for a complete listing of this data.)

This information can be used to infer a rough estimate of delivery time. A response by the first library in the queue can mean the requested item will be enroute to the borrower in a period ranging from 1 to 4 business days from the day it received the request. Since weekends may interrupt this period, the estimate should be lengthened to a period of 1 to 6 days. Thus 63 percent of CSB's ILL requests would be filled and enroute to Bakersfield in 1 to

6 calendar days after they were received by the responding library. Another 20 percent of requests would be enroute in 5 to 10 calendar days after they were received by the responding library.

It should be noted that these estimates refer to what is actually "handling time" for the responding library, only one segment of the borrowing process. The complete procurement and delivery procedure has four steps. Exhibit 5 diagrams these phases and the time element associated with each.


Elapsed Time (in days)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Patron Submits Request
(a) CSB Locates and Orders Item
(b) Responding Library Fills Order
(c) Delivery via UPS, Mail, etc to CSB
(d) CSB Notifies Patron
Document in Patron's Hands
UPS delivery from southern CSU campus can take as little as 2 work days.
Mail delivery from out of state can take 2 weeks or longer
Can take longer (up to 20 work days) if request is passed on to another library.
However, 60 % of requests are filled by 1st library contacted, 80 % by 1st or 2nd

**ILL Request Fulfillment Time**
(Steps involved in borrowing ILL items and associated time factors.)

**EXHIBIT 5**

The four steps involved in borrowing ILL items are explained below.

a. CSB Locates and Orders Item. In the example diagrammed in Exhibit 5, CSB requires two days to locate potential suppliers of the document. The two day period is more indicative of a backlog than of problems in locating potential lenders, according to ILL staff. However an estimated 3 percent of requests are for items not readily identifiable on OCLC or other regular locating sources.[66] These are referred to a reference librarian and may require subsequent contact with the requesting patron for added information.

b. Responding Library Fills Order. In the example diagrammed in Exhibit 5, the responding library has the item enroute to Bakersfield in three days after receiving CSB's request. This is typical for requests meeting two conditions: 1) they are filled by the first library contacted, and 2) the responding library is in the CSU system where priority service is given to other CSU libraries. These two conditions existed for approximately 41 percent of the periodical requests filled in 1985.[67] If a request is responded to by the second library contacted and that library is a CSU library, the requested material can be expected to be enroute to Bakersfield in anywhere from 6 to 11 days after the request is first transmitted from CSB. Approximately 54 percent of ILL requests filled in 1985 were handled by the first or second CSU library contacted. As Exhibit 5 indicates, however, this handling time can take up to 20 days if the request must be passed on to the last library in the queue and even longer if it is still unfilled and must be resubmitted to a new set of libraries.[68]

c. Delivery to CSB. In the example shown in Exhibit 5, delivery to CSB takes five days. Items ordered from CSU campuses are delivered via UPS and when coming from campuses in the Los Angeles area often arrive in 48 hours. However, as Exhibit 5 indicates, mail from some distance out of state may take two weeks or longer, according to ILL staff.

d. CSB Notifies Patron. The last step diagrammed is notification of the patron that the rquest has arrived. Patrons are first contacted by phone since they can often pick up their requested item from CSB in person faster than it can be delivered by local mail. If phone contact cannot be made the first day, the item is mailed directly to the patron's address.

The cumulative fulfillment time for the example diagrammed in Exhibit 5 is 12 days from the time the request is submitted to the time the document is in the hands of the patrons. For requests filled under the most favorable conditions (filled by the first library contacted which is also a CSU library in the Los Angeles area), this time can vary from 5 to 15 days.[69] This time period would be accurate for approximately 41 percent of the requests filled in 1985.

CSB's ILL staff have not attempted to measure the level of patron satisfaction associated with ILL request fulfillment time. However, reports from reference librarians based on their informal observations of the patrons they deal with suggest less than complete satisfaction. Librarians have observed, particularly with regard to business students, that after obtaining a sizeable bibliography via a computer database search, many patrons prefer driving a hundred miles

or more to a larger library in order to gain direct access to the needed resources over using ILL. In what might be interpreted as an additional indicator of possible dissatisfaction, Exhibit 5 shows a general drop over time (except for a recent upturn) in the level of patron use of ILL as measured by number of requests submitted.[70]

2. Cost

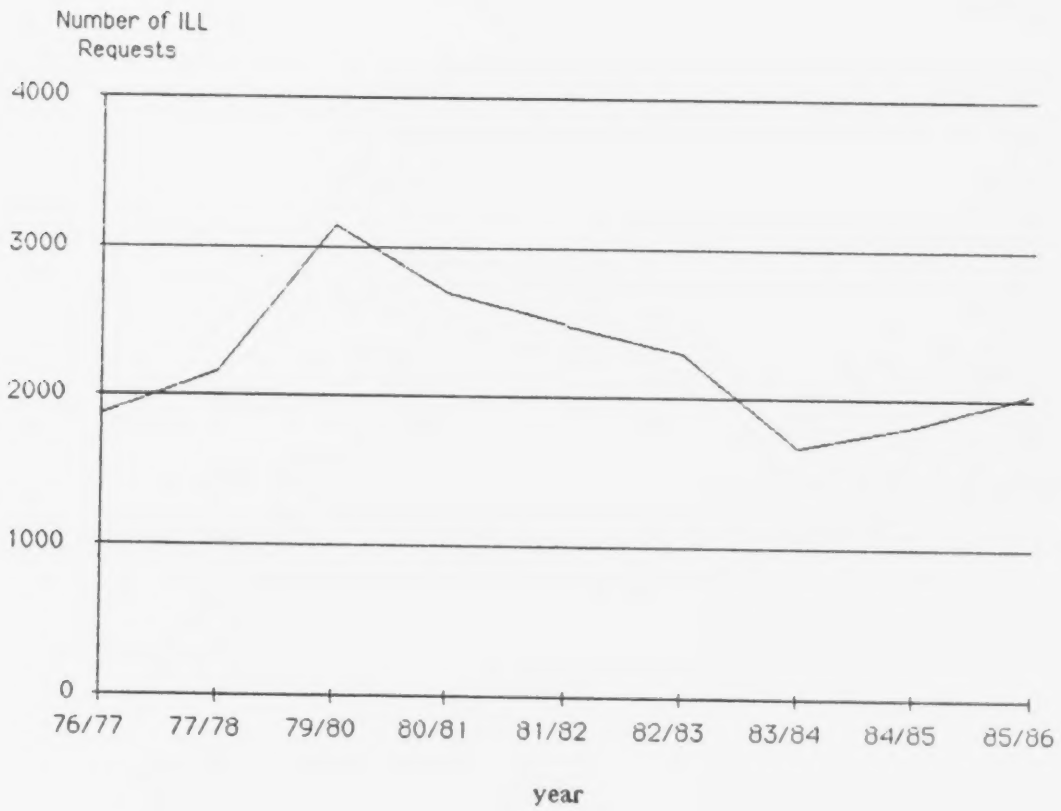
Because the purpose of this study was to investigate faster means of document delivery which are still cost effective, the authors felt a cost analysis of the document delivery aspect of CSB's ILL service would be helpful in developing a basis for defining what is "cost effective."

Library and ILL overhead costs such as physical facilities and equipment were not considered in this cost analysis because they would remain part of conventional ILL operations such as book borrowing and CSB lending to other libraries regardless of any changes considered in terms of document procurement and delivery. Further, since the staff time per unit involved in ordering requests via OCLC would be relatively similar if the requests were ordered from a commercial source, staff salaries were not to be considered either. Hence the ILL costs analyzed include the following three factors: ordering costs, handling charges and delivery costs.

Since the vast majority of ILL document procurement is done via OCLC, ordering costs simply reflect the sum of all applicable OCLC system fees; all other ordering is done by mail and the associated costs (the cost of an American Library Association request form) are insignificant. OCLC has a complex fee structure involving fixed charges for telecommunications, system-use, modem, and terminal

EXHIBIT 6

CSB ILL Activity as Measured by Total Requests Submitted 1976/77 to 1984/85




* 1978/79 data not available

maintenance, as well as variable charges based on the number of requests submitted on the system and the number of library holdings displays required in locating potential lenders.[71]

The average cost of ordering a request on OCLC including fixed charges based on 1986 rates would be $2.94 per request. However, as was the case with library physical facilities and staff, these costs would remain for other ILL functions (lending, book borrowing) regardless of any changes or enhancements to the document delivery aspects of the service. Consequently only the variable costs should be considered in determining ordering costs. The average cost would then be $1.39 per request.

Costs paid by CSB in order to obtain material for ILL patrons have escalated as the practice of charging handling, copying, and delivery fees has increased among all types of libraries. Like many libraries, CSB attempts to minimize these costs by participating in paid for 19 percent of its ILL requests. The average charge per request for these was $4.54 (median was $4) and ranged from a high of $19.00 to a low of $1.45.[72] As a matter of policy the CSB library will subsidize up to $7.00 per request for patrons, who must pay the difference for any charge exceeding that amount.

To summarize, the average procurement and delivery cost of an ILL request amounts to $1.39 for ordering and $.86 for handling, copying, and delivery (averaging in CSU-filled requests which are free) for a total of $2.25 per request.

3. Product Quality

The ILL staff have not surveyed user satisfaction regarding the material received. Staff members regard the quality of photocopied

articles as generally quite good. There is no evidence of patron complaints in this regard either in ILL files or in the recollection of the staff.

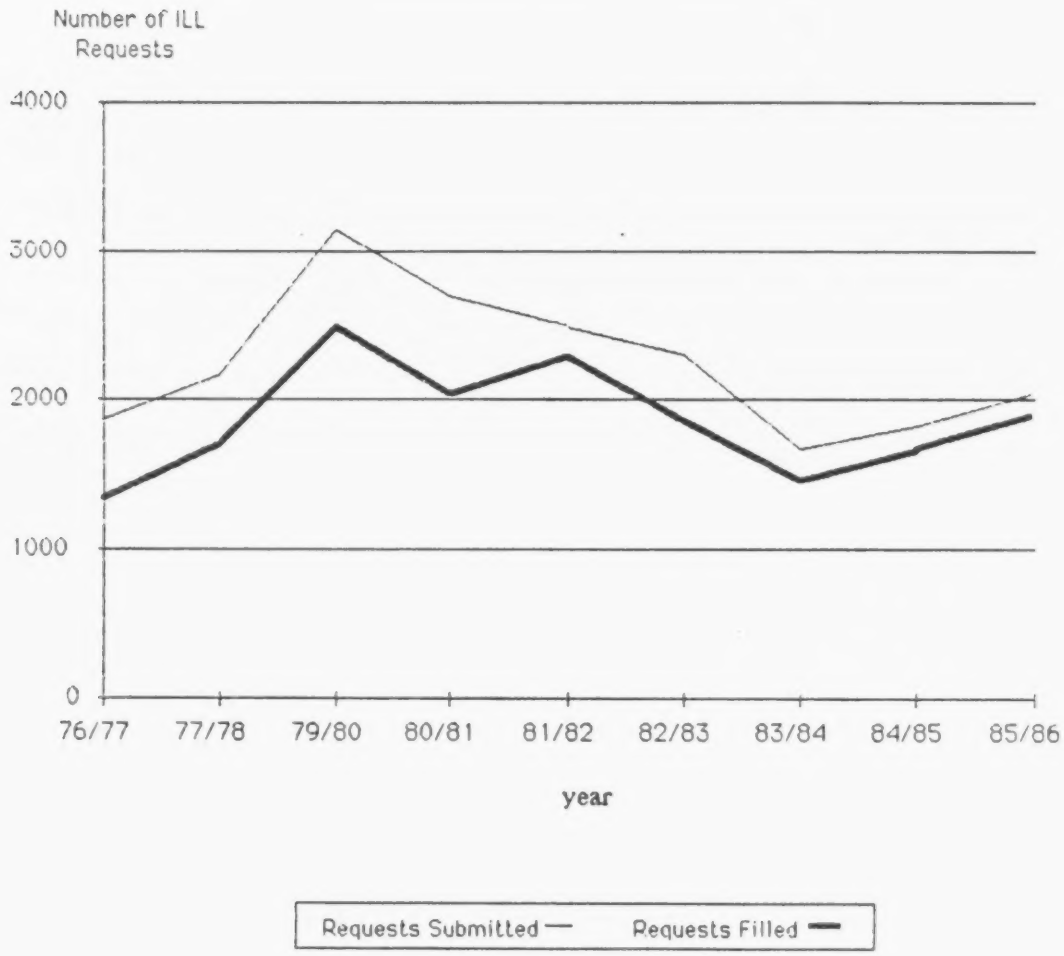
4. Reliability

As with all CSU ILL operations, CSB's ILL staff maintains statisitics on the total number of requests submitted by patrons each year and the total number which are ultimately filled. Based on a comparison of these two statistics, CSB's ILL service has offered patrons what seems to be a high degree of reliability as ILL service generally goes. At present, ILL is able to obtain 93 percent of the items patrons request. Exhibit 7, which compares the number of ILL requests submitted to the number successfully filled over a nine-year period, shows that ILL's reliability has continued to improve.[73]

It should be noted, however, that the ratio of "requests filled to requests submitted" referred to above is an incomplete measure of reliability because it does not account for fulfillment time. In obtaining the statistic for total number of successfully filled requests, the ILL staff counts all requests which are ultimately filled making no attempt to distinguish those filled by the first library tried from those not filled until a second or third or subsequent try. Consequently, a request for an item which was not obtained until the fourth try, for example, and which arrived too late for the patron to use would still be counted as sucessfully filled. At present the ILL staff does not keep statistics on the number of requests successfully filled in a specified amount of time.

EXHIBIT 7

CSB ILL Requests Submitted Compared to Requests Filled 1976/77 to 1985/86




* 1978/79 data not available

## F. Survey of Commercial Document Delivery Suppliers

In this first investigative phase of alternate document delivery methods, the authors' made a preliminary selection of eight commercial document delivery suppliers. The selected suppliers include: The British Library Document Supply Centre (BLDSC), Data/Courier, Information On Demand (IOD), The Information Store, Institute for Scientific Information (ISI), The Los Angeles Public Library (LAPL), Predicasts Article Delivery Service (PADS), and University Microfilms International Article Clearinghouse (UMI). These suppliers were selected because they met the criteria given in the limits of the study (pp. 4-6), the criteria for enhanced document delivery (pp. 37-44), and the authors' list of preferred supplier profiles (pp. 83-84). The following eight points profile the selected suppliers.

1. Two of the selected suppliers are conventional fee-based suppliers (e.g., libraries); two are information services; three are online database producers; and one is a clearinghouse.

2. Seven of the services are located in the United States—four in the eastern United States and three in California. Only one, the British Library Document Supply Center, is a foreign supplier.

3. Comprehensive subject coverage is offered by three suppliers (BLDSC, Information On Demand, and The Information Store); broad, but not comprehensive, subject coverage is offered by three suppliers (ISI, LAPL, and UMI); and specific subject coverage is given by two suppliers (Data/Courier and Predicasts).

4. All use multiple ordering and delivery methods.

5. All provide rush document delivery service.

6. All, with the exception of The Los Angeles Public Library, charge a base-price for a single article up to a maximum number of pages usually ten or twenty pages. Articles which are longer than this maximum are assessed additional charges.

7. All the suppliers using this base-price method, with the exception of the Information Store, normally include in that base-price handling fees, photocopying charges, copyright payments, and first class mail delivery costs.

8. All provide, as a minimum, good quality article photocopies.

The following pages summarize the services of each supplier. General background material is presented for each supplier as well as information on speed of delivery, cost, product and system quality, and reliability.[74]

**British Library Document Supply Center**
User Services International
Boston Spa
Wetherby
West Yorkshire LS23 7BQ
United Kingdom

General Background

The British Library Document Supply Centre (BLDSC), formerly the British Library Lending Division, is said to be the "largest library in the world devoted to document delivery. The BLDSC handles an average of 11,000 interlibrary lending requests each working day. The journal collection covers all subjects and languages and includes more than 180,000 journals with 3-4,000 new titles added annually. Published guides to the collection are available.

The BLDSC serves both national and international groups and institutions including 37% from special libraries, 30% from academic libraries, 24% from foreign countries, and 9% from public libraries.

Speed of Delivery

The BLDSC ships requested photocopies within 36 to 48 hours by air mail. By facsimile, documents are received within a few hours of the request.

Means of ordering include using prepaid forms, OCLC, DIALOG, Telex, DOCLINE, and group three FAX. Means of delivery is by air mail or facsimile.

Cost

The average cost for a photocopy ordered through OCLC is $6.50 which includes handling and shipping by air mail. No charge is assessed for unfilled orders. For the Urgent Action Service International, which uses a facsimile machine both for ordering and delivery, costs are $20 per order plus $5 per sheet transmitted. All automated requests require a deposit account. Other requests must be made on prepaid request forms.

Product and System Quality

Photocopies or telefacsimile copies are provided. BLDSC attempts to deliver the best possible copy. BLDSC complies with all copyright regulations.

Reliability

The BLDSC fills 85% of its requests from its own collection and 10% from its back-up libraries in the United Kingdom. Only 6% of its requests are unfilled. Future developments include further "digitization of documents and their transmission by satellite."

**Data/Courier Inc.**
620 South Fifth Street
Louisville, KY 40202-2297
502-582-4111
800-626-2823

General Background

Data/Courier's ABI/INFORM Retrieval service supplies photocopies of most articles cited in the ABI/INFORM Database (accessible through DIALOG and BRS database search systems). This document delivery service is known as The Goods. The ABI/INFORM database indexes over 660 business and management publications. Article photocopies from 600 of these titles from 1975 forward can be provided through Data/Courier's document delivery service.

Speed of Delivery

Orders are processed within 24 hours. Orders can be placed through an 800 phone number, U.S. mail, facsimile, electronic mail systems--DIALORDER, BRS, Knowledge Index, and Telex. Delivery methods include first class U.S. mail, facsimile, special delivery overnight mail, and full-text online.

Cost

Prices for document delivery are $6.75 per article with a deposit account, regardless of the length of the article. For services paid by any other payment plan, articles cost $8.25. These base prices include delivery by first class mail and copyright payments. A $5.00 charge is assessed for rush service along with delivery costs.

Data/Courier's payment plans include deposit accounts (reduced rates with $100 minimum), separate invoice for each article, or credit card payment.

Product and System Quality

Photocopies or electronically transmitted copies are provided. Data/Courier complies with all copyright regulations.

Reliability

Data/Courier's document delivery service can provide approximately 90%-95% of the articles cited in the ABI/Inform database.

**Information On Demand, Inc.** (IOD)
P.O. Box 9550
Berkeley, CA 94709

General Background

Information On Demand, Inc., is a full service information company with one of its functions being a document delivery. Its source for journals is a "professional field network" of twenty major (off-site) institutional libraries all over the United States. Employees, stationed at these various libraries, do the retrieval work. The range of subjects and years is comprehensive.

Speed of Delivery

Orders are generally filled within one week. A notification is sent and expected delivery date is given for orders not filled within one week. Rush service is available. Orders can be transmitted via an 800 phone number, mail, telex, facsimile, and electronic mail systems -- DIALOG, ONTYME, Compuserve, and IOD's Direct (which is free).

Delivery methods include airmail, UPS, Federal Express, courier, and facsimile.

Cost

Most requests, which can be found in IOD source libraries, cost $14 per item which includes up to twenty pages of photocopies, first class postage and copyright royalty payments. If 50-100 items are ordered per month the cost is reduced to $12. One hundred or more items requested per month run $11 per request. Titles filled from non-IOD sources are the same basic price as above with costs incurred added. Unfilled orders have a minimum handling charge of $2.50 per request. Rush service is available for an extra $10 charge plus any delivery costs incurred. Status reports are available for $10/month or free with IOD Direct electronic mail. Deposit accounts require a beginning minimum of $300 and a continuing balance of $200, which also provides a 5% discount on all requests. Itemized monthly billing is also available.

Product and System Quality

Photocopies are generally provided. IOD complies with all copyright regulations. Royalty payments are included in the price. Status reports are provided monthly on request. The requestor can also specify cost and page limits, shipping and billing locations, and date after which information is no longer needed. Such limits can be set as a blanket policy or can vary from request to request. No special forms are required. All that is needed is just enough bibliographic information to uniquely identify the request.

Reliability

IOD states that they can deliver any information requested and because of this, they do not publish a catalog of available materials.

Other

IOD is willing to enter into a trial arrangement with CSB Library on a reduced-rate basis.

**The Information Store, Inc.**
Marketing Department/Document Retrieval Division
140 Second Street, 5th Floor
San Francisco, CA 94105

General Background

The Information Store, is a full service information company. One of its services includes document delivery. Information Store relies on off-site collections and thus they state that they can provide materials in a comprehensive range of subjects and years.

Speed of Delivery

Over 80% of Information Store's orders are filled within five working days. Status reports are provided for orders requiring special handling.

Requests can be transmitted by phone, U.S. mail, electronic mail systems--ONTYME, or by facsimile. Delivery methods include mail and special delivery services.

Cost

Requested orders start at a fixed price of $8.25 which includes "copyright checking." In addition to this base price charges are also levied for royalty payments, copies, rush service, handling, postal or delivery charges, and other fees.

Product and System Quality

The Information Store generally provides article photocopies. The Information Store complies with all copyright regulations. Appropriate royalty payments are charged the user at cost..

The Information Store has been used by a special corporate library in Bakersfield.

Reliability

Because The Information Store states that they can provide any information requested and because they rely on other established information resources, there is no published catalog of available materials.

**Institute for Scientific Information (ISI)**
3501 Market Street
Philadelphia, Pennsylvania 19104

General Background

Institute for Scientific Information (ISI), a database producer, is the publisher of several well-known indexes in the humanities, social sciences,and sciences. ISI also operates a document delivery service known as The Genuine Article, formerly known as the Original Article Text Service (OATS). ISI supplies articles from 8,000 journal titles published from 1982 to the present. Subjects covered include science, social sciences, the arts, and the humanities.

Speed of Delivery

Orders are processed within 48 hours if request is received by mail or electronically; within 24 hours if ordered by telephoned; and within 30 minutes via facsimile. Orders can be placed using ISI forms by mail, phone, electronic mail systems -- DIALOG or ISI's EM box available through CLASS, or by facsimile. Orders can be processed in any format--a checked bibliography, computer printout, or even a slip of paper--so long as there is enough information to identify the reference. If the ISI accession number is included the charges are less. Delivery is made by first class mail, overnight mail, or facsimile..

Cost

Document delivery costs are $8 per article for ten pages or less which includes delivery by first class mail. Two dollars is charged for each additional ten pages or less over the first ten pages. There is a surcharge on some titles for higher than normal copyright payments. The following charges are added as appropriate: $1 per article for phone orders; 25 cents per article ordered with no ISI accession number; $11 overnight mail; $15 per article of ten pages or less delivered by facsimile and $2 for each additional ten pages or less delivered by facsimile. There is no special service charge for ordering electronically.

ISI provides four payment plans: 1) using prepaid ISI stamps, 2) monthly billing, 3) deposit account which includes a statement with a minimum deposit of $200, and 4) high volume contracts of at least 1200 articles ordered per year with annual or monthly prepayment based on estimated usage or monthly billing based on actual usage. The high volume contract also offers discounted document delivery because many additional charges do not apply. With these discounts the base price of a request can be as low as $7.60.

Product and System Quality

ISI supplies articles from 8,000 journals, mainly journal tear sheets (similar to reprints) and some photocopies, all of high quality print. ISI complies with all copyright regulations. Orders can be processed in any format.

Reliability

No information was available on fulfillment rate except that articles are supplied from 8,000 journals published from 1982 to the present.

**Los Angeles Public Library (Central)**
630 W. Fifth Street
Los Angeles, CA 90071

General Background

In addition to Los Angeles Public Library's conventional interlibrary loan service, LAPL also provides a fee-based document delivery service. With a periodical subscription list of 6,250 titles, LAPL's special subject collections include California, drama, theatre, and film, business, economics, science, and technology. [75]

Speed of Delivery

No information was received on fulfillment time with the exception that rush service is available.

Cost

The cost for document delivery is 25 cents per page for journal photo copies, $1 per page for full page newspaper copies.

Additional charges include $5 for handling and first class postage for each five items or less and $10 for rush same-day delivery via UPS.

Deposit accounts are not used. Instead, a library or organization can establish an account and be billed.

Ordering methods include using the U.S. mail, telephone, or the ONTYME electronic mail system. Charges for using the ONTYME system are very inexpensive, $3 per hour plus 25 cents per 1000 characters. Delivery mechanisms include UPS and the U.S. mail.

Product and System Quality

Photocopies of articles are provided. Los Angeles Public Library complies with all copyright regulations.

Reliability

No information was provided concerning fulfillment rate.
A published list of LAPL's journal holdings is available.

**Predicasts Article Delivery Service (PADS)**
200 University Circle
Research Center
11001 Cedar Avenue
Cleveland, OH 44106
800-321-6388

General Background

Predicasts, a database producer, offers the Predicasts Article Delivery Service (PADS). Subject and time coverage includes trade, business and government journals and annual reports from 1984 to the present. Twelve hundred titles are indexed in Predicast databases and 99.5% of those titles can be delivered through PADS.

Speed of Delivery

Orders are processed within two business days after receipt. Orders can be placed by mail, telephone, electronic mail systems (DIALORDER), and PADS order cards.

Delivery is made by first class mail or special delivery.

Cost

The base price for each document is $10. Surcharges are assessed as follows: $10 for rush orders, $1.50 per article requested by online, telex, or phone; $1 per page over for an article over ten pages; $3 for each order which must be invoiced.

Payment procedures include: deposit accounts of a $200 minimum; PADS Stamps, monthly billing for accounts with minimum of $200 invoiced per month, or payment by check or credit card with orders.

Product and System Quality

Photocopies of articles are provided. Predicasts complies with all copyright regulations.

Reliability

No information was provided on reliability except that over 99% of the titles listed in the Predicast databases are available through PADS.

**University Microfilms International (UMI)**
UMI Article Clearinghouse
300 N. Zeeb Road
Ann Arbor, MI 48106

General Background

University Microfilms International is billed as "the world's largest directly licensed supplier of article photocopies." UMI is also a major supplier of information in microform formats. The UMI Article Clearinghouse has a dedicated collection of 9,000 titles with broad subject coverage, ranging from general interest publications to highly specialized titles.

Speed of Delivery

UMI guarantees 48-hour in-house turnaround of all orders for material published from 1978 forward. Rush service is available. Orders can be placed through UMI's phone service (Articall), U.S. mail, electronic mail systems--OCLC's ILL Subsystem, BRS (UMAC which has no online transaction charges and provides for batch ordering). Delivery is made by first class mail, special delivery overnight service, telefacsimile Group III (Artifax), and Federal Express' Zap Mail (Group IV telefacsimile).

Cost

UMI has a fixed price per article regardless of length. Various surcharges are assessed for additional services. Below are the fixed pricing levels and surcharges.

1986 PRICE SCHEDULE

| | 1978 Forward | Pre-1978 |
|---|---|---|
| **Deposit Accounts - Online Orders** | | |
| Level 1 - $2,000+ | $5.00 | $ 9.00 |
| Level 2 - $200-$1,999 | $7.00 | $10.00 |

Multiple-institution accounts are available at Level 1 prices with a minimum opening deposit of $5,000

**Delivery Surcharges**

| | |
|---|---|
| Artifax (overnight fax) | $ 9.00* |
| Zapmail (overnight fax) | $15.00* |
| Rush first class mail | $ 5.00 |
| Rush overnight mail | $15.00 |

*Add 30 cents per page for articles over 20 pages

**Ordering Surcharges**

| | |
|---|---|
| Articall (telephone) | $5.00 |
| Mail or Facsimile | $5.00 |

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UMI offers three payment plans: 1) deposit account, 2) monthly billing based on actual usage, or 3) multiple institution deposit accounts at Level 1 pricing with a minimum account of $5,000

Reliability

All periodical titles published from 1978 to the present and listed in UMI's holdings can be supplied. Most Pre-1978 periodical articles can be supplied but this is not guaranteed. A published catalog of UMI's holdings is available.

Future Developments

UMI now has a prototype model of its Information Delivery Module (IDM) at a few library test sights. Introduced in 1985, the IDM has "two subsystems: one for receiving, forwarding and printing digitally-transmitted images; and the other for retrieving, displaying and printing documents and data stored on optical disc. The IDM also billed as an "information vending machine," will initially only include articles from "core journals in selected fields."

## VI. ANALYSIS AND INTERPRETATION OF FINDINGS

The preceding section summarized data accumulated in the five segments of the authors' research: 1) the review of CSB's existing ILL operation, 2) the analysis of CSB patrons' external resource demands, 3) the review of significant professional literature, 4) the evaluation of CSB's ILL service in terms of document delivery, and 5) the survey of commercial document suppliers. An analysis and interpretation of the varied types of information obtained in these investigations is presented in this section along with what seemed to the authors to be the most relevant implications for the future development of document delivery at CSB. Where necessary, findings presented in the preceding section are further explained or qualified in this section.

### A. CSB's ILL Operation

An analysis of the information obtained in reviewing the development and operation of CSB's existing ILL service supports the following observations.

1. A high demand for external information resources exists among CSB Library patrons.

2. The CSB Library relies heavily on its existing document delivery service (ILL) to meet the patron demand for external resources.

3. CSU libraries which are isolated and those which possess small collections rely more heavily on external resource sharing.

4. There has been a consistent interest over time on the part of the CSB Library staff and the CSU system in improving the speed and efficiency of document delivery.

## B. Patrons' External Resource Demands at CSB

The following general points emerged in an analysis of the data obtained from studying patrons' external resource demands as represented by ILL periodical borrowing requests.

1. Subject interests reflected in external information demands were broadly distributed across the major subject areas of the humanities, sciences, and social sciences.

2. These subjects would also prove to be the most cost effective to access via document delivery because they are some of the most high priced items.

3. A higher demand existed for more recent information; 77 percent of requests were for articles published in the last ten years.

4. The largest percentage of requests are for shorter documents; 82 percent of requests were for documents ten pages for fewer in length.

5. Online bibliographic database searching has marginal impact on CSB's patron demands for external resources. Regarding similar findings in other studies, Stevenson pointed out,

> This does not mean that computer searches have no effect at all, but it appears to be slight and mainly likely to be manifested in special libraries that have had previously a poor bibliographic service.

However a developing patron attitude which may signal an increased impact by computer searching on external resource demand is identified by Martin.

> If an item is not owned by a library, the fact that the material exists, i.e., that it has been bibliographically identified, suggests that it should be available without delay, through interlibary loan, no matter whether it was published a century, ten years or ten days ago.[77]

6. CSB patrons are willing to pay at least a nominal fee for the information they request. This could be interpreted as a very weak indicator of patron perception of need for the information requested. If 77 percent are willing to pay for document delivery service which has little preditability, it could be inferred that they would be willing to pay something for commercially supplied data which guaranteed predictable fulfillment of requests. This is consistent with the findings of other researchers as indicated by the following statement.

> It must be recognized that some library customers are already showing ready acceptance of quite high charges for computer literature searches and for the consequent document delivery services they need.[78]

## C. LITERATURE ANALYSIS

An analysis of the relevant professional literature identified the following implications for the future development of document delivery at CSB:

1. Commercial document delivery suppliers are viable options for CSB for the following reasons.

a.The use of such suppliers does not require any reciprocal agreement other than payment for services as is the case with conventional ILL networks.

b.Such suppliers usually handle copyright agreements by paying royalty fees to publishers or the Copyright Clearance Center.

c.Often these suppliers' sole function is to supply documents and therefore they do that job well, efficiently, and quickly.

d.These suppliers have a collection which is non-circulating and dedicated for document delivery purposes or have access to many large collections. The requestor can be assured that the materials will be available. Often the holdings of the supplier are known from published or online catalogs.

e.Many of these suppliers are accessible by electronic means for both requesting materials and for document delivery.

f.All such suppliers provide accounting functions to simplify billing.

2. The four types of commercial suppliers best suited for CSB's needs are: a) conventional suppliers, b) information brokers, c) on-line database producers, and d) clearinghouse suppliers.

3. There are a growing number of full text databases which have potential for meeting part of CSB's document delivery needs.

4. Accessing external information resources through commercial suppliers carries with it potentially higher costs than access through conventional ILL, but includes potentially faster, more convenient, and more predictable service.

5. Commercial document delivery suppliers offer greater reliability than conventional ILL. Reliability refers to the likelihood that a supplier will have the requested document in its holdings or can access it and expedite transmission to the user in a timely fashion.

6. Commercial document delivery services usually offer discounts with the use of deposit accounts and/or high volume usage.

7. Cost savings will be realized if existing technological systems at CSB such as OCLC, DIALOG, BRS, ONTYME, etc., can be used in accessing commercial document delivery suppliers.

8. Copyright royalty fees become a factor when considering commercial document delivery suppliers costs. However, it should be noted that conventional ILL services frequently interpret the "Fair Use" clause of the Copyright Law so broadly that royalty fees are not involved in typical ILL transactions even when they should be.

9. Consistent and predictable delivery speed is as important as the speed of delivery itself.

10. Commercial Document delivery suppliers which have access to their own in-house collections are preferred over those which must depend on conventional suppliers such as academic, research, public and special libraries. However, suppliers which are located in California and are close to major research centers should also be given strong consideration.

11. Telefacsimile and electronic mail are the most effective methods for contacting commercial document suppliers. In terms of delivery methods, special delivery service, telefacsimile, and full-text online service are the most effective methods. These are also the most expensive.

12. Commercial document delivery suppliers offer a number of features which enhance the quality of their system and the readability of the information received.

## D. CSB Document Delivery Service (ILL)

An examination of the performance of CSB's existing document delivery service yielded the following general observations.

1. Periodical requests represent the largest portion of patron demand at CSB for external information resources.

2. ILL's document procurement and delivery process involves many variables which make delivery time difficult for ILL staff to predict and for patrons to plan around.

3. Under the most favorable conditions, document delivery via ILL can take between five days and two weeks. As stated in the presentation of findings regarding this point, no direct measurement of patron satisfaction with this performance has been undertaken. However, both informal observations by the library's reference staff and a general downward trend in the level of ILL activity might be interpreted as indicating some dissatisfaction. Such dissatisfaction is sometimes characterized as a sense of frustration experienced by patrons and is an unfortunate side effect of unevenly-paced developments in the field of document procurement and delivery. Advancements in technology for identifying and locating information, which have resulted in greatly increased user expectations, have outpaced improvements in systems for delivery of the information which would fully satisfy those expectations.[79]

4. The costs associated with conventional ILL at CSB are very low. However, two points should be made regarding costs. First, the low costs are the result of a free borrowing agreement among all CSU libraries which eliminates handling and copying charges and "free"

UPS delivery of materials (free to CSB because the CSU system pays for it). Second, in making a cost analysis of ILL the authors purposely ignored the fixed overhead costs associated with ILL since that service and those costs would remain independent of any decision to channel a portion of ILL's "business" to commercial suppliers. Instead the analysis focused on the marginal costs of document delivery in an effort to develop a basis for defining acceptable costs when considering commercial document delivery services.

Despite the authors' intended exclusion of total ILL costs from their analysis, however, the overall cost of ILL really must be considered at some point if a comparison is being made with the costs of commercial document delivery. If only the document delivery (ILL borrowing) aspect is considered, ILL seems much cheaper than any service available from a commercial source. Indeed it should, since ILL is based on mutual borrowing and lending agreements and was originally "free." (Only relatively recently have charges for handling and copying proliferated among libraries.) However, it is inaccurate, to separate the costs of ILL borrowing from the costs of ILL lending since the ILL concept is based on reciprocity--there is no borrowing without lending. Consequently the total cost of ILL participation must be considered and when that is done the costs of commercial document suppliers appear to be reasonable.

5. The CSB Library strongly supports the concept of providing patrons access to external information resources by subsidizing the costs involved in obtaining these resources at a level of $7 per request.

6. CSB's ILL service has high reliability, successfully filling

93 percent of the requests submitted by patrons. However, as noted in the presentation of these findings, in obtaining the statistic for total number of successfully filled requests, the ILL staff does not account for fulfillment time. Consequently, a request for an item which was not obatined until the fourth try, for example, and which arrived too late for the patron to use would still be counted as successfully filled. The data presented earlier in Exhibit 7 indicate the possibility that ILL's current measure of successful fulfillment is not very meaningful. The top line illustrating the trend over time in the total number of ILL requests submitted by patrons has been generally dropping except for a slight upturn recently. Yet for the same time period, the percent of requests successfully completed (by ILL definition) which is illustrated by the bottom line has been steadily rising. One explanation for these seemingly contradictory trends is that while a patron stands a pretty good chance of eventually getting a desired item, the time required to do so has eliminated ILL as an option for many patrons with limited time constraints.[80]

### E. Selected Commercial Document Delivery Suppliers

This section generalizes on and compares the services of the eight selected commercial document suppliers. The reader should note that while all these suppliers offer similar types of services, it is nearly impossible to do an exact comparison of the suppliers solely based on the information gathered from the survey. The two most varied aspects of the eight suppliers concerns the cost involved and the time required to process an order.

Prices for the delivery of a six page periodical article range from a low of $5 to a high of $50. The higher prices usually provide faster delivery via rush service. The suppliers' processing time, varies anywhere from 30 minutes to 48 hours. All suppliers provide some type of rush service.

Suppliers' fee schedules vary substantially. Some have a base price which includes certain processing fees while others charge on a per cost basis. Most do not include the telecommunication charges for ordering or receiving documents and this of course increases the total price paid for document delivery.

Information on delivery speed also varies. Some suppliers give the maximum amount of time that will lapse before they process the order while others provide the estimated delivery time which includes the time between when a document delivery request is sent to a supplier and the time it is received from the supplier by the library.[81]

Product and system quality and reliability are also difficult to categorize as these are subjective criteria and suppliers provide varied amounts of information concerning these areas.

The actual operational comparison or assessment of these suppliers and the determination of which services are most cost-effective for particular needs must await a second evaluative research phase as recommended by the authors. However, for the purposes of analyzing and summarizing the information gathered thus far, Exhibit 8 outlines the general pricing and processing speed

ranges available from each of the eight suppliers selected as potentially viable for handling CSB's external resource needs.[82] (The prices in the table are calculated based on a typical request for a recent, six page periodical article ordered electronically.)

COMPARISON OF SELECTED COMMERCIAL DOCUMENT DELIVERY SUPPLIERS

| | CONVENTIONAL DELIVERY* | RUSH DELIVERY* | PROCESSING SPEED |
|---|---|---|---|
| BRITISH LIBRARY DOCUMENT SUPPLY CENTRE | $6.50 (with deposit account) | $50.00 For urgent action service international which uses facsimile machine for both ordering & delivery (with deposit account) | Ships requested photocopies within 36 to 48 hours by air mail. By facsimile, documents are recieved w/in a few hours of the request. Other rush service is available. |
| DATA/ COURIER | $6.75 (with deposit account)<br>$8.25 (without deposit account) | $11.75 Plus delivery charges (with deposit account)<br>$13.25 Plus delivery charges (without deposit account) | Orders are processed within 24 hours. Rush service is available by special delivery or electronically |
| INFORMATION ON DEMAND | $11.00 100 + articles per mo.; $12.00 50-100 articles per mo.; $14.00 < 50 articles per mo. Plus delivery charges (5% discount with deposit account) | $21.00 100+ articles per mo.; $22.00 50-100 articles per mo.; 24.00 < 50 articles per mo. Plus delivery charges (5% discount with deposit account) | Orders are generally filled within one week. Rush service is available by special delivery or electronically. |
| INFORMATION STORE | $8.50 Plus additional charges for copies, royalty payments, rush service, etc. | Data not available | Over 80% of Information store's orders are filled within 5 working days. Rush service is available. |
| INSTITUTE FOR SCIENTIFIC INFO. | $8.00 Without high volume discount<br>$7.60 With high volume discount | $19.00 overnight mail; $23.00 facsimile delv. Without high volume discount<br>$18.60 overnight mail; $22.60 facsimile delv. With high volume discount | Orders are processed within 48 hours if request is received by mail or electronically; within 24 hours if orderd by phone; and within 30 minutes via facsimile. |
| LOS ANGELES PUBLIC LIBRARY | $6.50 | $11.50 | No fulfillment time data supplied. 1st class mail or rush same day delivery available. |
| PREDICASTS | $11.50 | $21.50 | Orders are processed w/in 2 business days after recpt. Rush service is available. |
| UMI | 1978 + / pre-1978: dep acct $2000+ $5.00 / $9.00; dep acct $200-$1999 $7.00 / $10.00 | 1978+ / pre-1978: dep acct $2000 & up $14.00 fax / $18.00, $20.00 overnight / $24.00; dep acct $200-$1999 $16.00 fax / $19.00, $22.00 overnight / $25.00 | 48-hour in-house turn around of all orders for material published from 1978 to the present. Rush service is available both through conventional and electronic delivery methods. |

*Unless otherwise stated above all prices include photocpy.handling. 1st class mail deliv.&copyright complience

## VII. CONCLUSIONS

An analysis of the authors' research findings have led to the following general determinations.

1. Although commercial document delivery is more expensive than conventional ILL, commercial services would be more responsive to users with time constraints. At present, CSB users with limited time are not being effectively served by conventional ILL because ILL is operated under the priority of obtaining external resources at the lowest cost. Speed of delivery is only a secondary priority.

2. Commercial document delivery services have the potential for meeting CSB document delivery needs and deserve further evaluation and consideration for implementation. In order to determine which service is fastest, most cost effective, most reliable, and offers the best quality document delivery, the selected commercial document delivery suppliers will have to be evaluated simultaneously.

3. In determining which commercial document suppliers should be considered for further evaluation, preference should be given those which:

(a) provide broad subject coverage or coverage in one or more of the following areas: business, public administration, and economics; psychology; biology, medicine, and nursing; education, physical education,and child development; English and literature; and philosophy;

(b) provide subject coverage of materials for at least the most recent ten years;

(c) be able to meet a high proportion of CSB's external periodical demands;

(d) provide or claims to provide consistent and predictable delivery speed;

(e) provide readable documents and clear illustrations when such illustrations are needed to fully understand the article;

(f) have access to their own in-house collections or access to large collections;

(g) utilize existing automated systems already used at CSB such as OCLC, DIALOG, BRS, ONTYME, etc.;

(h) provide multiple communication and delivery methods including electronic mail, telefacsimile, special delivery, etc.;

(i) provide an easy-to-use, straight-forward and reliable systems;

(j) provide accounting and record-keeping features and some means of receiving feedback concerning document requests.

4. If selected commerical document delivery services are used and meet the basic needs as listed in number 3 above, then the next step would involve selecting the service or supplier which is most cost effective.

5. Two other areas which warrant further investigation include the use of deposit accounts and/or high volume contracts with commercial document delivery services and the use of online full-text document delivery.

6. Eight suppliers were found to fall within the basic limits of the study as listed on page 4, and the authors' conclusions which have just been listed. These suppliers represent various types of document supply services as listed below.

Conventional (fee-based) Suppliers:
Los Angeles Public Library
British Library Document Supply Centre

Information Brokers and Services:
Information On Demand
Information Store

Online Database Producers:
Institute for Scientific Information (ISI)
Data/Courier (ABI/Inform)
Predicasts

Clearinghouse:
University Microfilms International Article Clearinghouse

## VIII. RECOMMENDATIONS

Based on the foregoing analyses and conclusions, the authors offer a number of recommendations in the following pages. These points consist of (A) relatively short-term and specific recommendations for further investigation by the CSB Library pursuant to the development of an enhanced document delivery program, and (B) longer-term recommendations for investigation of some broader issues and larger-scale activities which might be explored on the CSU system level.

### A. Specific Recommendations for CSB

1. The eight commercial document delivery suppliers and services listed above should be evaluated to determine which ones provide the fastest, most cost-effective, most reliable, and best quality document delivery for CSB users.

2. Methods for obtaining more exact data and information needed in this evaluation might include:

a. calculating the speed, cost, quality, and reliability of each supplier for "typical" CSB periodical ILL requests using a simulation model;

b. analyzing or sampling two additional years of CSB ILL periodical requests;

c. surveying CSB Library users and alumni concerning their document delivery needs;

d. compiling data on CSB's ILL fulfillment time as a means of comparing commercial document delivery services;

e. using the simulation model for a preliminary evaluation, the two or three most viable suppliers would then actually be used simultaneously with CSB's conventional ILL for a three to six month test period. During this test period, a set of identical external information requests would be conveyed under controlled conditions to each supplier as well as through conventional ILL processes. The performance of each respondent would be measured in terms of delivery speed, cost, quality and reliability.

3. A definition of what represents "cost-effective" document delivery needs to be determined. In developing a definition the Library should consider (a) the costs per request associated with conventional ILL as a basis for comparison,[83] (b) the relatively long-standing Library policy of willingness to subsidize up to $7 per request for external information resources, (c) the relative value of faster document delivery to the Library and/or patron, and (d) the cost avoidance achievable for the Library in not owning certain low-demand material.

4. In considering the issue of funding for more expensive services several areas should be analyzed. One area of concern is the cycle of CSB's external resource needs within each school term. If patron needs warranted, conventional ILL could be used predominantly early in the quarter, and faster but more costly commercial services could be used more heavily in the second half of the quarter. Thus, the higher costs would be balanced by the more economical services in the first part of the term.

A second and somewhat related area of investigation would be the possibility of decreasing charges for document delivery through use at "non-peak hours."

Third, decreased costs might also be available by investigating high volume discount possibilities generated by requests from not only CSB but CSB and any combination of the following: a) Kern County Public Library, b) Kern County Businesses and special Libraries, c) particular groups of academic libraries such as the smaller CSU campuses, etc.

Fourth, it would be useful to look into offering a completely self-supporting fee-based "rush" document delivery service as an alternative to conventional ILL.

Finally, to help subsidize faster document delivery for CSB Library users, a fee-based service night be introduced for other user groups in the Bakersfield community (businesses, professionals, etc.) with a rate structure such that resulting revenues would assist in reducing costs to CSB's normal clientele.

B. Recommendations for Further Investigation at CSU System Level

1. Broader-scale activities which might be addressed at the CSU system level include:

a. Investigating the possbility of CSU system libraries seeking bids from various commercia document suppliers in order to receive the most-cost effective serice.

b. Considering the redevelopment of a CSU telefacsimile network using high speed digital telefcsimile equipment.

c. Exploring the possibility of document delivery by means of the CSU Spine via satellite and microwave transmissions (proposed CSB ITV Network). Atkinson notes that libraries need to join forces with other agencies and organizations which aleady have a telecommunications system in place and utilize it for document delivery rather than continue to rely wholly on the telephone companies or other telecommunication companies.[84]

tions system in place and utilize it for document delivery rather

d. Looking into the feasibility, usage and importance of integrated and compatible OLPAC systems used within the CSU system, looking at the possibility of having user initiated document delivery between campuses.

e. Investigating further the possibility of courier systems and online full-text database services for document delivery use.

2. There are also many wide ranging policy considerations encompassing both enhancement of document delivery service and the broader concept of access to information as an alternative to ownership for libraries. The authors feel that one such consideration which deserves attention at the CSU system level is that of organizational and financial planning for all types of external resource procurement (including conventional ILL as well as document delivery alternatives). An investigation of this issue should involve re-examining libraries' functional organizations and the cost allocations associated with those functions. From a functional standpoint ILL (and alternative document delivery services) is closely allied with Acquisitions, since the purpose of any such service is procurement of materials which are not currently owned by the Library. While ILL's

role in this relationship was once minimal, it has rapidly grown in recent years with the development of information technology and networking. Though the implications of these relatively recent developments have been recognized by libraries in some areas, many of the organizational and funding implications have been largely overlooked.

As Martin points out regarding libraries generally,

> What has not yet been evident are any large-scale reconsiderations of collection development goals nor re-examination of the role of interlibrary loan together with a recognition of the needed support. Such considerations must, however, now be central to any library's financial planning. If proper use is to be made of increased access to external resources, libraries must be prepared to transfer from funds intended to support acquisition of materials sufficient money to support increased interlibrary loan and database searching.[85]

The question of ILL's relationship to Acquisitions in the library organization and budget is really part of a larger question which has surfaced in connection with relatively new developments in electronic publishing, storage, and retrieval--are traditional library organizational structures suitable for effectively dealing with new information formats? Martin advocates that approaches toward program redefinition,

> . . . must take into account the effects of the new fluidity of information and the electronic infrastructure that carries it. The boundaries between Reference, Circulation, Interlibrary Loan and Acquisitions are artificial and may well be impediments to the proper exploitation of these new resources. A library program for resource acquisition must now include parts of all these traditional functions and must consequently result in a new budgetary model.[86]

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63
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65
"Interlibrary Loan Information Sheet," Library, California State College, Bakersfield, 1985.

66
Frost, Interview.

67
This figure is based on CSB's ILL statistics for 1984 and 1985 which indicate that 64.9 percent of ILL requests were filled by CSU libraries, combined with the authors' findings that 63 percent of ILL periodical requests in 1985 were filled by the first library contacted.

68
Technically, 26 days handling time (counting weekends) will have elapsed if a request is not filled until reaching the fifth library in the queue. However, frequently a contacted library which is unable to fill a request will so indicate immediately thereby causing the request to be automatically forwarded to the next library without the normal four-day wait. Such courtesy on the part of ILL participants can greatly reduce overall handling time.

69
A fulfillment time of 15 days = 1 day for CSB to request the item + 4 days for the responding library to acknowledge that it will comply with the request + 1 day for the responding library to process the item for UPS shipment + 4 days for UPS pickup and delivery of item + 1 day for CSB's notification of patron and patron's arrival to pick up item + 4 total weekend days if CSB originally initiated the request on any day but a Monday.

70
The data represented in Exhibit 6 were obtained from California State University, Division of Library Affairs, Library Statistics, for the years 1976/77 through 1984/85.

71
Fixed OCLC charges for 1985/86 included telecommunication charges at $148/month, system use fees at $26.50/month, modem charges at $65/month, and terminal maintenance at $38/month. Variable charges included charge per ILL request sent at $1.34/request, and charge for extra holdings displays at $.09/display. A credit of $.20/request is given to CSB for each item it lends via OCLC.

72
These figures are based on ILL invoices from libraries and other document suppliers paid by CSB in 1985/86.

73
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Information and data compiled for these descriptions were gathered from suppliers' literature and/or through phone conversations with supplier representatives.

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There are other possible explanations for the decline in the number of ILL requests submitted by CSB patrons. The level and type of Faculty research activity has an impact on the volume of ILL requests submitted in a given year. The increased use of computer searches by patrons may also have affected the level of ILL borrowing activity. With their information requirements more precisely identified as a result of using computer searches, patrons may actually need to submit fewer ILL requests to satisfy their needs.

81
Hurd and Molyneux, pp. 182-183.

82
Information compiled for these descriptions was gathered from supplier literature and/or through phone conversations with supplier representatives.

[83] The authors recommend that the ILL costs used for comparison be limited to those directly corresponding to document delivery processes (i.e., periodical borrowing costs such as variable OCLC charges). If at a future time commercial suppliers are considered as a possible alternative for conventional ILL in its entirety, then total borrowing and lending costs, including those subsidized by the CSU System, should be considered.

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APPENDIX A.

RESULTS OF ANALYSIS OF PATRON'S RESOURCE DEMANDS AT CSB

| General Subject Areas | Number of Requests | % of Requests |
|---|---|---|
| Social Sciences | 568 | 54% |
| Humanities | 219 | 21% |
| Sciences | 205 | 20% |
| Other Miscellaneous | 61 | 6% |

| Humanities | | % of Humanities Requests | % of total Requests |
|---|---|---|---|
| English & Literature | 87 | 40% | 8% |
| Philosophy | 82 | 37% | 8% |
| French | 19 | 9% | 2% |
| Communications | 9 | 4% | 1% |
| History | 8 | 4% | 1% |
| Music | 6 | 3% | 1% |
| Art | 5 | 2% | .5% |
| Drama | 2 | 1% | .2% |
| Spanish | 1 | .5% | .1% |
| Total | 219 | | |

| Sciences | | % of Science Requests | % of total Requests |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Biology | 52 | 25% | 5% |
| Medicine | 50 | 24% | 5% |
| Nursing | 46 | 22% | 4% |
| Geology | 12 | 6% | 1% |
| Science (general) | 12 | 6% | 1% |
| Environmental Sciences | 10 | 5% | 1% |
| Chemistry | 9 | 4% | 1% |
| Computer Science | 7 | 3% | 1% |
| Health Sciences | 4 | .5% | .4% |
| Physics | 2 | 1% | .2% |
| Biochemistry | 1 | .5% | .1% |
| Total | 205 | | |

| Social Sciences | | % of Social Science Requests | % of total Requests |
|---|---|---|---|
| Psychology | 145 | 26% | 14% |
| Management Info Systems | 105 | 19% | 10% |
| Education | 102 | 18% | 10% |
| Business (general) | 65 | 11% | 6% |
| Marketing | 34 | 6% | 3% |
| Sociology | 21 | 4% | 2% |
| Management | 19 | 3% | 2% |
| Physical Education | 18 | 3% | 3% |
| Law | 12 | 2% | 1% |
| Accounting | 10 | 2% | 1% |
| Criminal Justice | 7 | 1% | 1% |

| | | | |
|---|---|---|---|
| Finance | 6 | 1% | 1% |
| Anthropology | 5 | 1% | .5% |
| Health Care Management | 4 | 1% | .4% |
| Child Development | 3 | .5% | .3% |
| Economics | 3 | .5% | .3% |
| Political Science | 3 | .5% | .3% |
| Special Education | 3 | .5% | .3% |
| Counseling | 2 | .4% | .2% |
| Public Administration | 1 | .2% | .1% |
| Total | 568 | | |

| Year of Publication | Number of Requests | % of Total Requests |
|---|---|---|
| 1980-1985 | 674 | 64% |
| 1975-1979 | 138 | 13% |
| Pre 1960 (1959-1783) | 79 | 8% |
| 1970-1974 | 77 | 7% |
| 1965-1969 | 44 | 4% |
| 1960-1964 | 21 | 2% |
| Not given | 20 | 2% |

| Year of Publication | Number of Requests |
|---|---|
| 1985 | 51 |
| 1984 | 226 |
| 1983 | 193 |

| | |
|---|---|
| 1982 | 103 |
| 1981 | 58 |
| 1980 | 43 |
| 1979 | 30 |
| 1978 | 29 |
| 1977 | 29 |
| 1976 | 20 |
| 1975 | 30 |
| 1974 | 26 |
| 1973 | 16 |
| 1972 | 15 |
| 1971 | 11 |
| 1970 | 9 |
| 1969 | 13 |
| 1968 | 13 |
| 1967 | 10 |
| 1966 | 3 |
| 1965 | 5 |
| 1964 | 5 |
| 1963 | 7 |
| 1962 | 4 |
| 1961 | 3 |
| 1960 | 2 |

| Number of Pages Ranging | Number of Requests | % of Total Requests |
|---|---|---|
| 1-10 | 860 | 82% |

| | | |
|---|---|---|
| 11-20 | 149 | 14% |
| More than 20 | 37 | 4% |
| Not given | 7 | 1% |

| Number of Pages | Number of Requests |
|---|---|
| 1 | 60 |
| 2 | 113 |
| 3 | 101 |
| 4 | 114 |
| 5 | 115 |
| 6 | 105 |
| 7 | 69 |
| 8 | 77 |
| 9 | 57 |
| 10 | 49 |
| 11 | 32 |
| 12 | 33 |
| 13 | 20 |
| 14 | 19 |
| 15 | 11 |
| 16 | 13 |
| 17 | 5 |
| 18 | 4 |
| 19 | 9 |
| 20 | 3 |
| More than 20 pages | 37 |
| Not given | 7 |

## SOURCE OF CITATION

| | | |
|---|---|---|
| No citation source given | 558 | |
| Citation source given | 495 | |
| References retrieved from some computer data base | 175 | (35% of 495) |

**Computer references came from:**

| | |
|---|---|
| Psychinfo | 49 |
| Medline | 21 |
| BRS search (no data base cited) | 14 |
| Computer search (no data base cited) | 104 |

**References retrieved from other sources:**

| | |
|---|---|
| MLA Bibliography | 26 |
| Business Index | 26 |
| Business Periodicals Index | 12 |
| CIJE | 11 |
| Education Index | 10 |
| Psych Abstract | 21 |
| Social Science Index | 15 |

| Supplier Number | Number of Requests | % of Total Requests |
|---|---|---|
| 1 | 666 | 63% |
| 2 | 214 | 20% |
| 3 | 78 | 7% |
| 4 | 46 | 4% |
| 5 | 37 | 4% |
| 6 | 1 | .1% |
| 7 | 0 | 0% |
| 8 | 1 | .1% |
| 9 | 10 | 0% |
| Not given | | |
| Total | 1053 | |

**Number of Requestors Willing to Pay Photocopying Fees**

| Number | Percentage |
|---|---|
| 812 signed yes | 77% |
| 241 did not sign | 23% |

| Borrower Status | Number of Requests | % of Requests |
|---|---|---|
| Faculty | 409 | 39% |
| Graduate Student | 260 | 25% |
| Undergraduate Student | 283 | 27% |
| Staff | 17 | 2% |
| Other | 12 | 1% |
| Not given | 72 | 7% |
| Total | 1053 | |

APPENDIX B.

UNSTRUCTURED QUESTIONNAIRE SENT TO
COMMERCIAL DOCUMENT SUPPLIERS

A colleague and I have a grant to study sources of document procurement and delivery capable of providing more timely and/or cost effective service than does our Library's present Interlibrary Loan system. In this connection I am writing to request information about the document delivery services provided by your company.

I am particularly interested in any information you can supply in connection with the following points:

*the **scope** of your information service, specifically, the range of subject materials accessible, the type of materials (periodical articles, reports, etc.) and the approximate number of titles accessible;
*the **costs** involved, specifically, your rates, minimum orders, available discounts, and payment procedures (deposit account, retainer, etc.);
***fulfillment time** and **means of delivery** (if electronic delivery is available what communications facilities are required at receiving end?);
*ordering procedures;
*procedure for copyright compliance;
*other libraries that have used your service

Depending on your responses in these areas, we would like to evaluate your service by actually using it for a limited time, perhaps on a free or reduced-rate basis. Please let me know if you would be open to a trial arrangement of this sort.

I appreciate your time in providing the requested information. Our deadline for this aspect of our study is **April 7**. If it is more convenient for you to respond by phone, please contact **Dave Allen** or **Johanna Alexander** at **805-833-3172**. Thank you for your help.

Sincerely,

David B. Allen
Head of Circulation Services
Cal State Bakersfield Library
9001 Stockdale Highway
Bakersfield, CA 93311-1099

bjm

# END

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